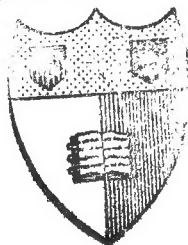


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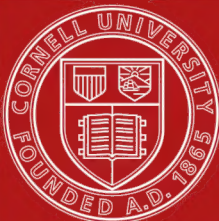
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JONES & COMPANY,  
BELL FOUNDERS,

AND PROPRIETORS OF THE OLD ESTABLISHED

MUSIC LIBRARY

TROY BELL FOUNDRY,

MANUFACTURERS OF

Church Bells, Chimes and Peals of Bells,

AND

FIRE ALARM BELLS OF ALL SIZES;

EXCLUSIVE OWNERS OF

Hildreth's Patent Rotary Yoke with the Round Shank Bell.

A LARGE ASSORTMENT OF

CHURCH, ACADEMY, FACTORY, STEAMBOAT,  
LOCOMOTIVE, PLANTATION,

AND OTHER BELLS, KEPT CONSTANTLY ON HAND,

Corner Adams and First Streets,

TROY, N. Y.



TROY, N. Y.

A. W. SCRIBNER, BOOK AND JOB PRINTER, CANNON PLACE.



# TROY BELL FOUNDRY.

---

THE BELLS of this well known establishment are of pure metal, and excel in depth and richness of tone, prolongation of sound and durability. They are hung with "Patent Rotary Yokes" and other mountings, the best and most complete in use, and are warranted one year against breaking, and, in all respects, to give full satisfaction to the purchasers.

The Proprietors, having been brought up from early youth to an experimental and practical acquaintance with the bell business in all its details, claim to be practical Bell Founders; in addition to which we have the benefit of the experience and accumulated memoranda of our late father and his partner, thus giving us a range of experience extending over a period of half a century. We believe we are justified in saying that our Bells have the best reputation of any in the market, and as their manufacture is our exclusive business, to which we give our entire attention, our patrons may rely upon our sustaining that reputation. We have, also, the exclusive right to use the ROUND SHANK BELL, together with a new and greatly improved style of HANGINGS, which adds remarkably to the *durability* of the bell, by allowing it to be readily turned in the yoke, thereby bringing the blow of the clapper in a new place, and at the same time increases and improves the tone, by the firm force with which the round taper-shank of the bell is held immovably in the yoke. We own it exclusively, and WARN all others to desist from its USE, or PURCHASING Bells with ROUND TAPERING SHANK.

The Proprietors believe themselves fully warranted in saying that their extensive and long continued experience, and the very material improvements that have been successively invented, and introduced into their method of casting bells, and the construction and adaptation of their hangings, have enabled them to bring this important branch of manufacture to a greater per-

fection than hitherto attained ; in proof of the correctness of which they need only refer to the well established, and constantly increasing estimation in which their bells are held by the public, the large number of gold and silver medals awarded them by public institutions for their superiority over all others, the commendatory and highly flattering testimonials constantly received from purchasers (a few of which are appended hereto), and their constantly increasing orders.

Situated at a point most favorable for shipping bells cheaply, and with expedition to all parts of the land, their ample and extensive foundry and grounds, and enlarged and superior facilities and appliances for the manufacture of bells, are unsurpassed by any other establishment in the country or the world.

WE are now, and at all times, prepared to furnish BELLS OF ALL DESCRIPTIONS, weighing from

### **15 to 20,000 Pounds,**

and most unhesitatingly warranted to be, in each and every one of the qualities and requisites which constitute a *perfect* bell, equal to the best article ever manufactured. We challenge comparison of our bells with any others made.

More full descriptions of the several kinds and varieties of bells, together with the hangings suitable for each, and Lists of Prices, keys, dimensions, &c., will be found on subsequent pages, under the appropriate heads.

### **B E L L S**

Cast and hung by these improved methods and processes, far excel those made in the ordinary way, in Tone, Durability, and Volume of Sound, as well as in Perfect Finish. This was tested in competition with different Bell Founders in the United States at the Fair of the MECHANICS' METROPOLITAN INSTITUTE, at Washington, D. C., in February, 1853, and a premium was awarded us for the most perfect Castings, clearest tone, and longest vibration, of Bells of the same weight, over the oldest Bell Manufacturers in this country. We were also awarded the highest premium at the STATE FAIR, held at Saratoga Springs, in September, 1853. And at the STATE FAIR, held at Water-

town in 1856, we again received the highest premium—our bells being pronounced *superior* in richness and power of tone.

At the Fair of the AMERICAN INSTITUTE, held at Castle Garden, New York, October, 1853, we were awarded a *Gold Medal* for superior bells; again in 1855, the only Medal for best specimen of Church Bells, was awarded us. We also received the First Premium at the IOWA STATE AGRICULTURAL SOCIETY FAIR, held in 1856, for *best* Church Bells; also, the *First Premium* from the CONNECTICUT STATE AGRICULTURAL SOCIETY FAIR, held at New Haven in 1856; at the

### WORLD'S FAIR,

held at the *Crystal Palace*, January, 1854, we received the *Medal* for superior tone and finish of Bells, in competition with those of Europe, and several from this country.

At the State Fair held at Albany, in October, 1859, we received premiums as follows, viz.:

FIRST PREMIUM ON - - - - CHURCH BELLS.

FIRST PREMIUM ON - - - - ACADEMY BELLS.

FIRST PREMIUM ON - - - - LOCOMOTIVE BELLS.

FIRST PREMIUM ON - - - - CHIME OF BELLS.

FIRST PREMIUM ON - - - - PATENT ROTARY YOKE.

Besides a SPECIAL award of the LARGE SILVER MEDAL TO THE CHIME.

These were the *only* FIRST PREMIUMS awarded on either of the above classes of Bells.

### *Patent Rotary Yoke.*

We ask *especial* attention to the fact, that our PATENT ROTARY YOKE, (Hildreth's Patent,) was also awarded the Large Silver Medal, *over all competition*. For its advantages see page 8.

At the annual meeting of the New York State Agricultural Society, held at Elmira, N. Y., in 1860, we received the following awards:

BEST CHIME OF BELLS, - - - - FIRST PREMIUM.

BEST FIRE ALARM BELLS, - - - - FIRST PREMIUM.

BEST CHURCH BELLS, - - - - FIRST PREMIUM.

BEST COLLECTION OF BELLS, - - - - FIRST PREMIUM.

and on our *Patent Rotary Yoke* for Bells, FIRST PREMIUM.

In 1866, at Saratoga, N. Y., we received the

HIGHEST PREMIUM ON	- - -	PATENT ROTARY YOKE.
HIGHEST PREMIUM ON		FIRE ALARM BELL.
HIGHEST PREMIUM ON		CHURCH BELL.
HIGHEST PREMIUM ON	-	ACADEMY BELL.
HIGHEST PREMIUM ON	- -	PLANTATION BELL.
HIGHEST PREMIUM ON	-	BEST COLLECTION OF BELLS.

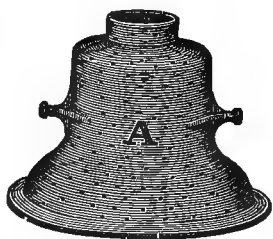
and we have received the FIRST PREMIUM at other competitive exhibitions.

As an evidence of the superiority of our manufactures, we refer not only to these and many other Premiums received at different times, but to thousands of our Bells now ringing throughout the United States, the British Possessions and Spanish America, and commendatory letters from those who have purchased them, without number. (See page 29.) The various *Gold, Silver and Bronze Medals*, also the *Diplomas* received, may be seen at our office at any time.

[NOTE.—All towers intended for Bells ought to be *ceiled* overhead to prevent the sound ascending into the tower, and the windows *well opened* (entirely, if possible,) to fully obtain the power of the Bell.]

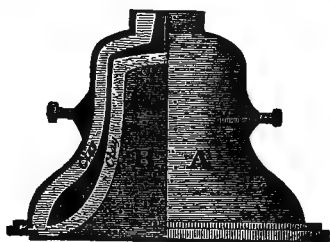
### ***Patent Metallic Flasks.***

The new mode of casting Bells in Perforated Metallic Flasks, now concededly the greatest modern improvement in the manufacture of Bells, was invented, patented, and first introduced at this establishment.



Previous to this invention, the moulds being made of clay and brick, had to be imbedded in the earth to prevent fracture in casting, and no provision being made for the escape of confined air and gasses, an imperfect or porous casting was too often the result, whereas these Metallic Flasks are made with numerous perforations, to prevent this difficulty. They consist of an outside Flask, (A) and an inside Flask, (B) of the general form of a Bell, as shown in the cut,

the one coated externally, and the other internally, with a combustible matter mixed with loam.



A, B, represents the two flasks closed together as in casting, with a section removed to show the relative position of the flasks with their several coatings, and the bell between them. The combustible matter burns out soon after the Bell is cast, giving it an opportunity to shrink, and thus preventing the occurrence of what is called a fire-crack or strain. Being above ground when cast, the gases escape freely, and there is a circulation of cool air, both in and outside of the mould. This causes the Bell to cool evenly, and a perfect and solid casting is the result, combining great strength and durability.

Our manner of closing the moulds by means of guides concentrically arranged in reference to the inner and outer flasks, (see A, B,) enables us to secure perfect uniformity in the thickness of the Bell. This renders the vibration perfect and more lasting, and produces from the Bell, not only the greatest *amount* of sound of which the metal it contains is susceptible, but that which is most rich, musical and agreeable; whereas in the old mode of casting, Bells are often found thicker on one side than the other and consequently of an imperfect and unpleasant tone, and liable to crack after some use.



"Hildreth's Patent Rotary Yoke,"  
 AND  
 THE ROUND SHANK BELL,  
 USED WITH  
 JONES & CO'S BELLS ONLY,  
 SECURING  
 GREATLY INCREASED DURABILITY,  
 AND  
 A More Full and Perfect Tone.



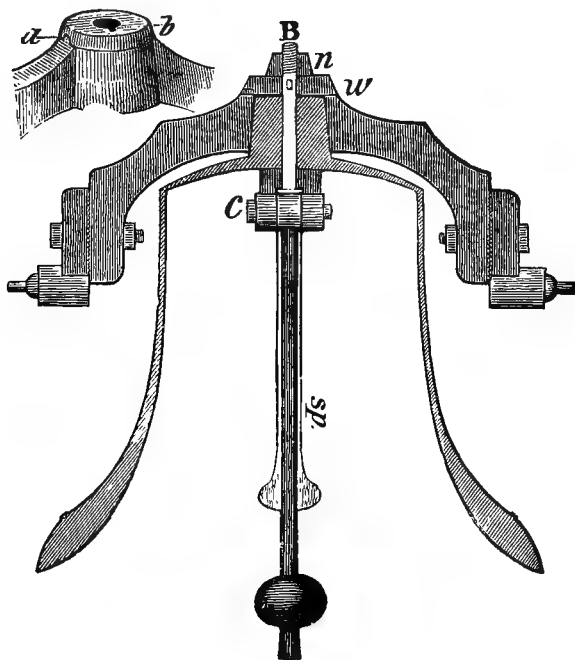
The Troy Bell Foundry own this patent, and the exclusive right to manufacture and sell Round Shank Bells, provided and hung with this Yoke, and have adapted it to all their Bells.

The advantages arising from this invention and appliance are very obvious, as will appear by a little explanation. The old mode of hanging Bells causes the clapper to strike constantly in two places only, on oppo-

site sides of the Bell, and in a direct line, so as to eventually cut it in two, which result is only a question of time. Whereas, by the use of the above yoke, a man can change the blow of the clapper to any other point in the circumference of the Bell in one minute, and as often as desired, leaving the Bell hung in the most perfect order, and the clapper and springs all the while

undisturbed and requiring no alteration, thus materially lessening the risk of breaking, and increasing the durability of the Bell beyond measure.

The Bell, it will be seen, is cast with a round tapering shank, made to exactly fit in a corresponding hole in the yoke.



The Bell is fastened in the yoke by a bolt, B, (as shown in the cut above,) with the Bell resting on the shoulders of the bolt. This bolt passes up through the shank of the Bell, and through a metal cap, (w) with a nut (n) screwed on the top of the bolt. By screwing up this nut, the shank is drawn firmly into the yoke, and they are held together with great solidity and force.

When it is desired to turn the Bell, it is only necessary to slacken or unscrew the nut a little, sufficiently to relieve the shank from contact with the yoke, and the bell will freely turn, resting on the shoulders of the bolt, and is made fast again by tightening up the nut. This is a process so simple and easily

performed, that a Bell of any size, may, when the nut is loosened, be turned by the hand alone.

The cap *w* is doweled to the yoke, so that it can not turn with the nut, and the bolt is prevented from turning by a projection from its sides, fitting a groove in the cap, by which means the swing of the tongue is kept always at right angles to the yoke, and it and the springs held stationary while the Bell is turned.

After turning the Bell, care should be taken to bring the shank again very snug and firmly into the yoke by tightening the nut with considerable force. A wrench is sent with each Church Bell.

### *Improved Tone.*

It is proved by experience, that the tone of the Bell is brought out much more fully and clearly by the firmness with which the shank of the Bell is held by this appliance in its corresponding socket in the yoke, than by the old plan, whereby the horns of the Bell are merely held by staples, in contact with the under side of the yoke. This method is unquestionably a great improvement in hanging Bells, and as such was awarded the silver medal of the American Institute for such improvement. We own it exclusively, and warn all others to desist from its use, or purchasing bells with the "round tapering shank."

NOTE.—The great and increasing favor in which this PATENT YOKE with the *Round Shank Bell* is held by the public, has led recently to a cumbersome imitation of it, in which it is attempted to adapt the old fashioned Bell, cast with horns, to being turned in the yoke. The arrangement, however, is so complicated and difficult to put in operation as to be of little practical value. This, however, not working to the satisfaction of the purchasers of Bells, another imitation (and which we claim is an infringement upon our "Round Shank Bells"), has been resorted to. The Bells are cast with "Round Shank," but have *three* bolts set into the shank of the Bell, with one bolt passing through the Bell, and all four passing through the metal cap, (*w*), and in order to turn the Bell all four nuts have to be loosened before the Bell can be turned. Another objection which all persons will at once perceive, is the three bolts which are set *into* the *outside* of the shank, thus materially weakening the shank of the Bell, and the liability of the Bell breaking is *increased* instead of diminished.

In behalf of those interested in this imitation it has been insinuated that a SINGLE BOLT, though sufficient to hold a small Bell, might not prove safe for a large one, to which we answer, that there is plainly no force in the objection, if the size of the

bolt is *in proportion* to the size of the Bell. We have for years, hung the largest Church Bells and Fire Alarm Bells, (weighing from 8,000 to 11,000 pounds,) with a single bolt, and *not one of them has ever failed or broken*, and we are ready to, and will in every instance if desired, bind ourselves in a satisfactory penalty that it shall not happen.

### *A Moveable Journal.*

We attach this so that the Bell can be raised or lowered in the yoke by means of the notched pivot arm bolted to the ends of the yoke, as shown in the cut on page 9, thus enabling any person to ring the largest bell with ease. For method of using this see directions at page 24.

### *Steel Springs*

Are so arranged and connected with the clapper, that it can not rest on the Bell, preventing the rebounding or jarring, (often heard where this is wanting,) prolonging the vibration, and improving the sound. These also are shown in the cut at page 9, where *sp.* represents the spring.

### *Frame, Wheel, Tolling Hammer, &c.*

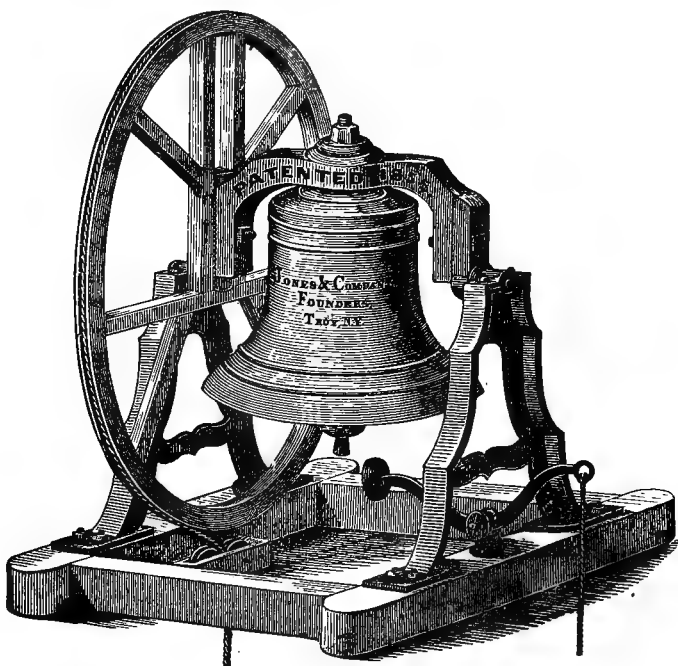
A timber frame, on which are placed the Iron Standards supporting the Bell, the Wheel, an extra Hammer for tolling, and a wrench accompany each Bell, and in cases of large Bells, a Counterpoise, to lessen the labor of ringing, and a Stop, to avoid the throwing over of the bell; in short, every appendage necessary for the hanging and ringing of bells. All, or any part will be furnished if desired.

### *Prices of Bells.*

Owing to the constant fluctuations in the price of metals on which the price of Bells depends, no uniform rate can be printed in a circular at which they will continue to be sold, but all inquiries from those desiring to purchase will be promptly responded to, and the lowest rates given.

Address,

“JONES & CO., TROY, N. Y.”



## CHURCH BELLS.

A complete assortment of Church Bells, of all sizes, from the smallest to the largest ever used, kept constantly on hand, made of the purest metal, cast on the improved plan above described, and hung with "Hildreth's Patent Rotary Yoke," the only really practical appliance which permits the Bell to be turned in the yoke at pleasure, so as to prevent the liability to break (see p. 8), a detached arm which secures ease in ringing; Steel Springs which hold the clapper from the Bell after it has struck, and prolong and improve the sound. Wooden Frame and Iron Stands, or uprights for supporting the Bell; Wheel of Oak timber and Tolling Hammer fitted with a clevis to the frame, each and all, the same in every respect, as separately hereinbefore described, and constituting the most complete, perfect and convenient fixtures for using the Bell under all circumstances yet devised. Sometimes Bells of less than 400 lbs. are used for small Churches, Chapels, &c., for which see "Academy, Factory and Depot Bells," page 14.

In the accompanying table will be found our list of Church Bells, range within which they may be toned, diameter at mouth, size of frame and wheel, and price of mountings :

WRIGHT OF BELL.	KEYS.	DIAMETER.	SIZE OF FRAME.	DIAMETER OF WHEEL.	PRICE OF HANGINGS.
400 lbs.	C to E	27 in.	38 in. Square.	48 in.	\$ 23.00
500 "	Bb " D	29 "	38 " "	48 "	30.00
600 "	Bb " C#	31 "	43 " "	53 "	32.00
700 "	A " C	33 "	43 " "	53 "	35.00
800 "	A " C	34 "	48 " "	63 "	35.00
900 "	Ab " B	36 "	50 " "	63 "	40.00
1000 "	Ab " B	38 "	51 " "	66 "	40.00
1100 "	G " Bb	40 "	53 " "	69 "	40.00
1200 "	G " B	41 "	53 " "	69 "	45.00
1300 "	F# " A	42 "	53 " "	69 "	45.00
1400 "	F " A	43 "	55 " "	78 "	50.00
1500 "	F " G#	44 "	58 " "	78 "	50.00
1600 "	F " G#	44 "	58 " "	78 "	50.00
1800 "	E " G	45 "	64 " "	84 "	65.00
2000 "	Eb " G	46 "	64 " "	84 "	70.00
2200 "	Eb " G	48 "	67 " "	84 "	70.00
2300 "	Eb " F#	49 "	67 " "	84 "	75.00
2500 "	D " F	50 "	72 " "	90 "	80.00
2800 "	D " F	52 "	72 " "	90 "	85.00
3000 "	D " F	53 "	72 " "	90 "	90.00
3300 "	Db " E	54 "	75 " "	90 "	90.00
3500 "	Db " E	56 "	77 " "	96 "	95.00
4000 "	C " Eb	58 "	77 " "	96 "	100.00
4500 "	C " Eb	60 "	82 " "	102 "	110.00
5000 "	B " D	62 "	82 " "	102 "	120.00

Chimes of Bells, hung in an Oak Frame, as shown on pages 17-19, or adapted to space and position in the Tower, at prices ranging from \$125 to \$300,—or each Bell hung separately with the Patent Rotary Yoke when desired, as is sometimes the case.

REMARK.—In procuring a bell, parties purchasing would do well to leave the determination of its tone to our discretion. It is frequently the case that the ringing quality of a bell is seriously impaired by its having been made upon a tone either higher or lower than that which the weight of metal is best calculated to give. This most frequently arises from endeavoring to imitate the tone of a favorite bell, in a new one, without due regard to their comparative weight. Of the range of tones of any bell given in our table, a medium between the highest and lowest will usually be found most desirable.

The diameters of bells, as given in our tables, exceed the exact measurements by fractional parts of an inch.

The weights given are those which designate the pattern, the actual weights usually exceed—ing these by from two to three per cent.



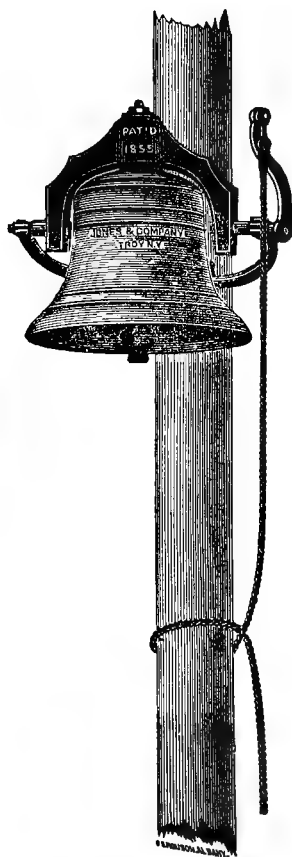
## FACTORY, ACADEMY & DEPOT BELLS.

From 100 lbs. to 400 lbs. in weight; hung with "Hildreth's Patent Rotary Yoke," which prevents the Bell from being broken in ringing, (see page 8,) Iron Wheel and Standards, timber frame and Steel Springs, being as full hangings in every respect as for Church Bells, except the Tolling Hammer and wrench.

LIST OF ACADEMY, FACTORY AND DEPOT BELLS.

WEIGHT.	DIA.	SIZE OF FRAME.	PRICE OF HANGINGS.	WEIGHT.	DIA.	SIZE OF FRAME.	PRICE OF HANGINGS.
100	17 in.	26 in. Sq.	\$10.00	225	23 in.	33 in. Sq.	\$15.00
125	18 "	27 " "	10.00	250	24 "	34 " "	18.00
150	19 "	28 " "	12.00	300	25 "	35 " "	18.00
180	20 "	31 " "	15.00	350	26 "	36 " "	20.00
200	22 "	33 " "	15.00	375	26 "	36 " "	20.00





## STEAMBOAT BELLS,

Ranging from 100 lbs. to 700 lbs., mounted with Revolving Yoke, with lever-arm attached, for steamboat ringing. Polished bells furnished to order; as also Gallows Frames and Fancy Mountings.

### LIST OF STEAMBOAT BELLS.

WEIGHT.	PRICE YOKE AND CRANK.	WEIGHT.	PRICE YOKE AND CRANK.
100 lbs.	\$6.00	350 lbs.	\$12.00
150 "	7.00	400 "	15.00
180 "	8.00	450 "	15.00
200 "	10.00	500 "	18.00
250 "	10.00	600 "	18.00
300 "	12.00	700 "	18.00

## SHIP BELLS,

Of any size, turned and finished in fancy hangings, in brass or bronze. Any lettering or inscription engraved on the Bells or Yokes desired.



## Locomotive, Plantation & Hose Carriage Bells

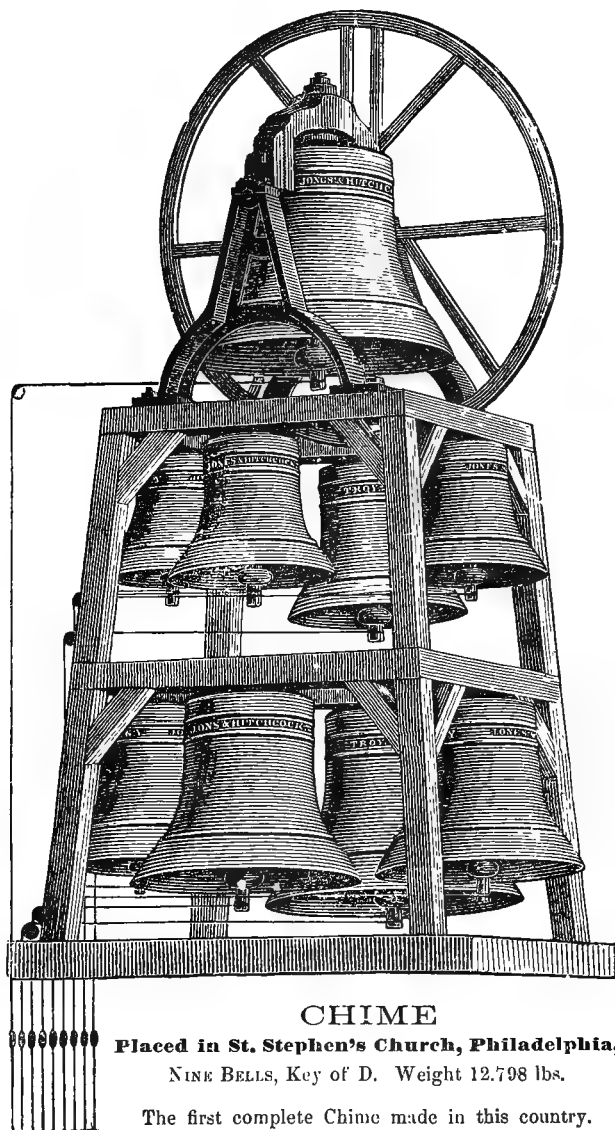
Ranging from 15 lbs. to 150 lbs.; mounted with Yoke and Tail, plain Yoke, or without mounting. Locomotive Bells cast with shank of any desired shape, without extra charge. Polished Bells furnished to order.

### BELLS OF LESS THAN 100 LBS.

Are usually furnished with a Yoke and Sparrow Tail only.

#### PRICES OF YOKE AND TAIL.

15 lbs. }		50 lbs.	\$3.50.
20 lbs. }	\$2.00.	60 lbs. }	\$4.00.
25 lbs. }	\$3.00.	80 lbs. }	\$5.00.
30 lbs. }		90 lbs. }	
40 lbs.	\$3.50.	100 lbs. }	



### CHIME

**Placed in St. Stephen's Church, Philadelphia,**

NINE BELLS, Key of D. Weight 12,798 lbs.

The first complete Chime made in this country.

### Chimes of Bells.

By this term is usually implied any number of bells which are attuned with each other, although, strictly speaking, a chime is a set of bells, the tones of which, beginning with the largest (commonly called the *tenor*), follow each other in *diatonic* succession. A peal, as now generally understood in this country, consists of three or more bells attuned in *harmonic* succession, which may be rung successively or simultaneously, but will not admit of a tune being played upon them. Thus a set of bells upon the eight notes of the common scale would be a chime; a



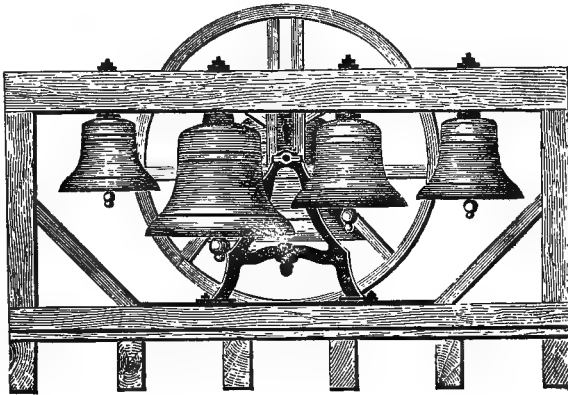
set upon the *first, third, fifth* and *eighth* of the scale would be a peal.

The smallest number of bells that may be said to compose a chime is five, beyond which the number may be increased indefinitely. What might be called the natural number would be eight—corresponding with the eight notes of the natural scale. Inasmuch, however, as the addition of the *flat seventh* tone to the common scale gives a new series of diatonic tones—to the number of five—in the key of the *fourth*, thus affording music in two keys, and, as the bell which produces that tone is of comparatively light weight, it is usually added to the octave, so that a full chime is now understood to consist of at least nine bells. By the addition of the *sharp fourth* tone a new series of six may also be obtained in the key of the *second*, but as this requires a much heavier bell it is but seldom employed. The whole number of bells rarely exceeds twelve, since those above the octave—unless the chime begins with a tenor of remarkable weight—are necessarily too light to give either the depth or volume of tone which is desirable.

The usual manner of mounting chimes in this country, is to suspend the bells stationarily (except the tenor) from a frame or beams, constructed in such a manner as will conform with the

size and construction of the tower.

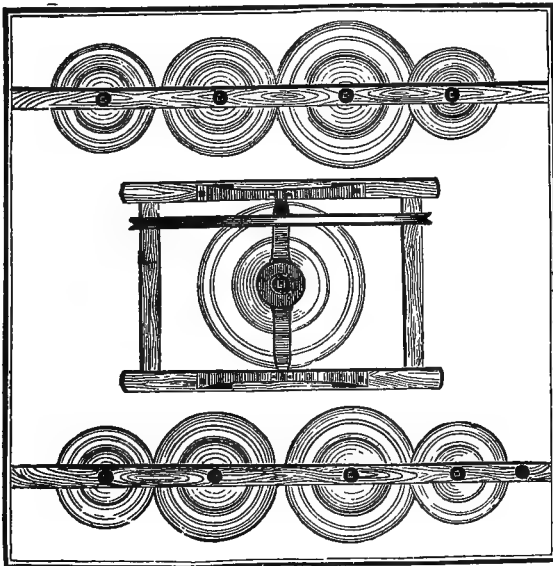
The bells are rung by means of cords attached to the clappers and led by pulleys to the ringer's room below, where they are [connected—in the order of the notes—with lever handles so arranged that the



Chime of Bells—Elevation (one side.)

bells may all be chimed by one person. The tenor bell is provided with mountings for swinging in order that it may be rung as an ordinary church bell, and is usually placed in the centre of the bell-room (or as in cut on page 17), the others being placed about it in such relative positions as will most judiciously distribute the weight and allow of the best arrangement of the ringing cords. In the English mode of mounting, each bell is

provided with a yoke and wheel, and the tone is produced by oscillating the bells as in ordinary church bell ringing, the whole being sustained by a heavy and complicated frame: the bells are rung by a corps of ringers—one man being employed at each—to or-



Chime of Bells—Horizontal Plan (looking from above.)

ganize and sustain which, particularly in a small town, is a matter of some difficulty. It will be seen that our mode of mounting is preferable in that a considerable portion of the original expense of ringing apparatus is saved; the chiming of the bells, being accomplished by one person, is not attended with that expense and trouble involved in keeping up a corps of ringers; the necessity for that long practice which a corps of ringers must have together, in order to ring even passably, is avoided; the bell-room does not require to be of as great capacity in order to accommodate the bells, and the strain and momentum produced by a number of bells swinging simultaneously being avoided, the tower does not require to be of as great strength. It is true, no doubt, of a single bell, that the peculiar *crescendo* and *diminuendo* tone which it gives when swinging, is preferable to the monotony of tone produced by striking it when at rest, but this monotony disappears when a number of harmonic bells are struck successively.

Peals of bells, since it is impracticable to play tunes upon them, usually have each bell mounted to be swung, so that a very pleasant variety of tone is obtained by their successive ringing, or when rung simultaneously—as upon national days and festive occasions—a fine effect is thus produced. It is usually contemplated, however, that a peal shall form the nucleus of a future chime, and with this view we always take and retain the exact tone of peal bells, and, when desired, that of single bells also, so that we may be able, at any subsequent time, to add others in harmony.

The illustrations given on pages 17–19 show our usual plans of placing chimes in the tower.

We pay particular attention to getting up Peals or Chimes of Bells, keyed on any letter of the musical scale desired. We commence the scale on C, D, E flat, E, F, or G. From either of these we can ascend an octave, and by adding one bell to the different scales, tunes can be played in different keys. For instance, in the key of C add F sharp, key of D add G sharp, key of E add D natural, and so on in each scale. With our improved mode of casting we are enabled to cast them precisely on their respective keys,

without resorting to the ordinary way of chipping or filing. This has never been done by any other Founders in this country or Europe. We would refer to one recently made at this Foundry and hung in St. Stephen's Church, Philadelphia (a correct design of which may be seen on page 17, the first COMPLETE CHIME ever made in this country, and would call your attention to the list of Peals, Chimes and Chime Bells below, which we are at liberty to refer to.

### *List of Chimes, Peals, and Chime Bells*

Which have been made at the Old Established Troy Bell Foundry, Troy, N. Y.

Year.	Where Sent.	No. of Bells.	Weight of the largest Bell.	Total Weight.
1853,	St. Stephen's Church, Philadelphia, Pa.,...	9	2,838 lbs.	12,798 lbs.
"	Rev. H. O. Sheldon, Bacon, O.,.....	2	1,550 "	2,510 "
1854,	First Evangelist Lutheran Church, Lancaster, Pa.,.....	8	2,020 "	8,144 "
"	Rev. Z. B. H. Marcotte, De Lavaltrie, C. E.,	3	1,073 "	2,327 "
1855,	" J. O. Pare, Montreal, C. E.,.....	3	2,989 "	6,789 "
"	" Mr. Laport, Kildare, C. E.,.....	3	946 "	2,235 "
"	" J. B. Labelle, Repentigny, C. E.,....	4	1,504 "	3,644 "
"	*Holy Cross Church, Troy, N. Y.,.....	1	550 "	550 "
1857,	Episcopal Church, Lowell, Mass.,.....	11	2,271 "	9,899 "
1859,	J. Anderson, New York City,.....	3	1,300 "	2,824 "
"	St. Joseph's Church, Fremont, O.,.....	1	2,009 "	2,009 "
"	Rev. L. M. Brassard, St. Roch L'Achigan, C. E.,.....	3	750 "	1,550 "
1860,	Rev. Alonzo G. Shears, New Haven, Ct.,	9	350 "	1,656 "
"	Church of the Nativity, Bridgeport, Ct.,	10	500 "	1,803 "
"	Trinity Church, Trenton, N. J.,.....	4	518 "	992 "
1861,	Rev. J. Harper, St. Gregoire, C. E.,.....	1	1,582 "	1,582 "
"	Rev. J. C. Marquis, St. Pierre Celestin, C. E.	3	660 "	1,281 "
1862,	Rev. Rupert Leidenbush, Newark, N. J.,	2	1,714 "	2,650 "
1863,	Rev. E. T. Hurteau, St. Lin, C. E.,.....	3	1,208 "	2,611 "
1864,	Rev. C. A. Loranger, Lanoraie, C. E.,...	4	1,555 "	3,253 "
"	Christ Church, Detroit, Mich.,.....	9	2,410 "	9,708 "
"	H. Schneider, Esq, Erie, Pa.,.....	2	792 "	1,311 "
"	Rev. J. Chévigny, Contrecoeur, C. E.,....	3	1,418 "	2,681 "
1865,	Rev. P. Bedard, L'Epiphanie, C. E.,.....	3	1,215 "	2,608 "
1867,	Rev. U. Archambault, St. Barthélemé, C. E.	3	1,991 "	3,932 "
"	St. Joseph's Church, Fremont, O.,....	2	1,173 "	1,910 "
"	St. Augustine Catholic Church, Lansingburgh, N. Y.,.....	3	1,600 "	3,200 "
"	Convent of Sacred Heart, Kenwood, Albany, N. Y.,.....	4	1,069 "	2,350 "

\*This Bell was originally cast (by another foundry,) to go with the Chime in that Church, but was decided to be the wrong key, and we were called upon to recast it.

**Hangings for Chimes.**—For method of hanging Chimes, and rates of hangings, see page 13.





## ALARM BELLS.

Patterns expressly for Fire Alarm Bells, of any desired weight, up to 20,000 lbs., hung in the same manner as those used in New York, with *Carson's Patent Fire Alarm Striking Apparatus* attached, if desired. The largest ever cast in this country, and now in use in New York city, were cast by us within the last few years, (as were nearly all of those now in use there,) also one in San Francisco.

### *Clapper Springs*

Are attached to all bells of 100 lbs., and upwards ; the position and action of which will be understood upon reference to the cut upon the 9th page. The spring and clapper-clevis are both connected to the centre bolt which passes up through the top of the bell, and by it the arms of the spring are always held in the path in which the clapper swings, catching it just before it reaches the bell, permitting it to strike with sufficient force, and then holding it away so that the vibration is uninterrupted, and its clattering upon the bell, after having struck, is avoided. To avoid the noise of contact of the clapper against the spring, the arms of the latter are sheathed at the ends with leather, which should be renewed occasionally as they become worn. Should the spring, after usage, be found to allow the clapper to strike a double blow it may be remedied by putting in a bar between the arms and the side of the bell, and bending them out a little further.

### *Tolling Hammer.*

Bells of 400 lbs., and upwards, are furnished with a tolling hammer which is attached to the frame, as shown in the cut upon the 12th page. This is a very desirable appendage for tolling, as by it a uniform and full blow may be obtained, and it is also very effective in giving a quick fire-alarm blow. When the bell is being rung by the main rope, the tolling hammer cord—if not under the eye of the ringer—should be so secured that it may not be thoughtlessly pulled, since the hammer is thus liable to be broken off and even the bell dismounted.

### *Stop.*

To prevent bells of large weight from being thrown over in ringing (which, owing to the manner in which the rope is adjusted for such bells, deranges its connection with the wheel), we attach a stop, or clutch, to the rim of the wheel, and a corresponding one to the frame platform, which clutches, coming in contact with each other just before the bell is mouth up, arrest its motion and allow it to swing back again.

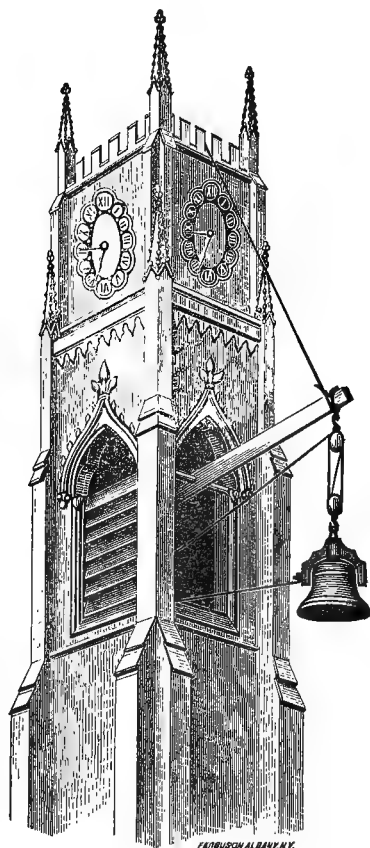
### *Old Bells.*

Old bell metal (copper and tin) bells taken in part payment for new ones, or bought outright. When forwarded to us mark legibly upon them in addition to our address, by whom sent, as it may avoid confusion.

### *Inscriptions.*

Any desired inscription will be put upon bells made to order, without extra charge.

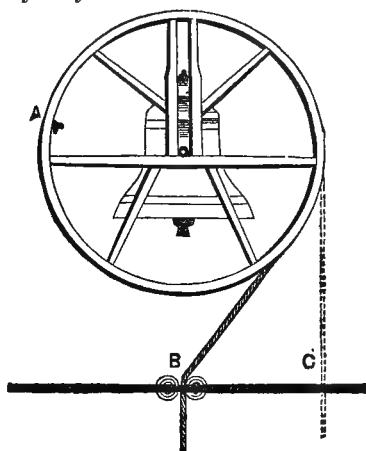
### *Directions for Mounting, Ringing, &c.*



In constructing the tower, if practicable, openings should be left so that the bell may be elevated to its place through the inside. Should it be necessary, however, to hoist it from the outside, the accompanying cut will give an idea of the manner in which it may be done. From near the top of one of the windows of the bell-room, project, at an elevated angle, a stick of timber of sufficient strength, at the end of which a tackle is attached. The timber must have a firm bearing and be secured so that it can not move. If sufficient power can not be applied to the tackle from within the bell-room, then lead the rope to the ground and pass it through a stationary pulley, so that any number of men, or a team, may draw upon it. Having got the bell to the

proper height it may be drawn in with a single rope or a

small tackle. In whatever manner the bell is hoisted, the frame should first be got up and placed in position so that it has a firm and level bearing; the wheel should also be got up and in readiness to attach. If desirable, the stands may be readily taken off from the frame, and the frame itself unjointed and taken up in pieces. Should it be impracticable to set the bell in the frame at once when hoisted, it may, if a new purchase with the tackle cannot be conveniently rigged, be raised from the bell-room floor by levers and blocking, care being taken not to break out its edges in using iron bars. In bolting on the wheel arm of the yoke, place it at the same notch as the other; and also place the wheel upon the opposite side of the frame to that to which the tolling hammer is attached. After the bell is mounted, brace the stands firmly sidewise, either to the floor or the sides of the tower, so as to prevent their becoming broken by any accidental side strain.



The manner of attaching the rope is shown in the accompanying cut, it being fastened to the wheel at A, and passes down directly under the center of the bell through the sheaves at B. With this arrangement the bell may be thrown over, as it will be more or less, and the connection of the rope with the wheel will not be deranged. If the weight of the bell is such that with the bend in the rope at B

the labor of ringing is too great, then it may be run down in the direction of the dotted line, passing through the floor at C, in which case no sheaves are necessary. With the rope so arranged it is necessary to prevent the bell from being thrown over, to effect which, a stop is attached to the wheel, as described at page 23, with which, however, care must be exercised when ringing, else the bell may swing with too great force when arrested by it, thus jarring the tower and injuring the mountings.

The rope should not be larger than is necessary, since by its inflexibility and weight it may encumber the free swing of the bell. The following sizes of ropes are suitable :

For bells of less than 500 pounds,  $\frac{1}{2}$  inch diameter.

"	from 500 to 800	"	$\frac{5}{8}$	"
"	from 900 to 1500	"	$\frac{3}{4}$	"
"	above 1500	"	1	"

In order that the sound of the bell may have free egress, its mouth, when at rest, ought not to be lower than the bottom of the windows, at the top of which the room should be ceiled over. The windows ought to be made as large as practicable, and the louver boards put in no nearer together than is necessary to exclude the rain.

The mountings should be examined occasionally to see that the nuts are screwed up and that the spring is in proper order. (See page 9.) The bearings should also be oiled occasionally, care being taken not to let oil or grease drip and accumulate upon the bell.

### *Directions for Ringing.*

The Sexton, or Bell-ringer, in commencing to ring, should, after allowing the clapper to strike six or eight times, *ring the bell up*, that is, with the mouth upward and horizontal ; then fasten the rope and desist a minute, or until the other bells (if any) have done the same, then repeat the ringing as before, alternating with the other bells of the city or village, if any. After ringing the usual time in this way, let down the bell and apply the extra hammer for tolling, or toll with the clapper, which gives a better sound, though the hammer, requiring less skill in use, is commonly preferred for tolling.

As the tolling hammer has not, like the clapper, a spring to throw it from the bell after the blow is struck, great care should be taken to strike a hard, short blow, and let the hammer drop from the side of the bell after the blow as quickly as possible, as any continued contact with the bell produces a very unpleasant, jarring sound.

### ***Raising Bell in the Yoke.***

Should the bell fail to ring with sufficient ease, block it up underneath, loosen the screws of the bolts which connect the yoke with the notched pivot-arms, and with a lever raise the bell one or two notches, as the case may require, and again fasten the bolts. In all cases the bell should be allowed to hang as low in the yoke as sufficient ease in ringing will allow, as the lower it hangs the heavier the blow given.

The yoke is properly adjusted, in this respect, before the bell leaves the foundry, and it will seldom be found necessary to make any variation.

### ***Turning the Bell in the Yoke.***

When it is desired to have the clapper strike in a different place *loosen* the nut above the yoke, when the bell may be readily turned with the hand, and again tighten the nut, *very tight*, as the tone is much improved by the great firmness with which the bell is held in this "Patent Rotary Yoke." See page 9.

### ***Warranty.***

Each bell of 100 lbs., or over, is accompanied by the following warranty attached to the bill of sale :

"The above mentioned bell, and its mountings, are warranted *not to break* in one year from date, and TONE warranted SATISFACTORY TO THE PURCHASER. Should they fail or break during the year, we agree to recast the bell or replace the broken mountings without charge."

Signed,

JONES & COMPANY.

DATED, TROY,

### ***Location.***

Our Foundry being located by the Depot of the New York Central, Hudson River, Eastern and Northern Railroads, at the junction of the Northern and Western Canals, and near the

Hudson River, gives us an advantage in shipping not possessed by any other establishment.

### ***Directions for Shipping.***

Parties ordering bells should state the route and mode of conveyance by which they wish them forwarded, as from our unrivaled location shipment may be made in almost any direction, either by land or water, by a variety of routes.

### ***Rates of Transportation.***

The rates of transportation are undergoing so many variations from season to season, and during the same season, that any general statement of them very soon loses all value and becomes liable to mislead.

When desired, however, we ascertain and communicate, by letter, the best route and means of conveyance to any given point, rate of freight, and time occupied in transportation. And it is our custom to make *through contracts* at the best rates available, inclosing duplicate receipts or bills of lading to the purchaser.

In all cases we pay freight to New York on Bells shipped in that direction, and going to or beyond that city.



## RECOMMENDATIONS

That have been received from every State in the Union and foreign parts where our bells have been sent. We present but a few.

ALFRED CARSON, Chief Engineer New York Fire Department, writes: In answer to your inquiry as to my opinion of the Fire Alarm Bell recently cast by you for the Marion Street Tower, I would say that I consider it at least equal to any bell cast for this city, and do not think it can be excelled by one of equal weight elsewhere.

[Wt. of bell, 10,000 lbs.; key of C.]

J. B. HOSMER, Treasurer Pearl Street Congregational Society, Hartford, Conn., writes: The bell you made for the Pearl Street Church was duly received, and was raised to its place, in the tower, last week. It has been rung repeatedly on week days, as well as on the Sabbath, so that our citizens have had an abundant opportunity to hear it and to compare it with the bells of our city. It is pronounced to be superior in richness of tone and vibration, and in the casting and finish, to any of our church bells, and is entirely satisfactory to the members of our Society. We shall take great pleasure in recommending your house for the manufacture of Church Bells of a superior quality.

[Wt. of bell, 2,709; key of D.]

HENRY COYLE, R. C. P., Waukegan, Ill., writes: We are happy to inform you of the safe arrival of the bell ordered at your establishment. It was immediately raised to its place of destination, such was the anxiety elicited by our citizens, as well as the members of our congregation, to hear its sweet and ponderous peals. All are satisfied, and acknowledge its superiority, in tone and vibration, over all the bells in this city. Many of our mechanics were attracted and astonished at the beauty of the casting, and declared it to be the neatest and smoothest bell they ever laid eyes upon. In honor to your superior abilities, gentlemen, in the formation of bells for sweetness of tone and loftiness of vibration, we cannot withhold our recommending your establishment to the public in general, who wish to secure superior bells.

[Wt. of bell, 1,125; key of A.]

A. M. PERKINS, Becket, N. Y., writes: Yours was duly received. My delay has been to hear of nearly all the members of our Society their opinion of the new bell. When our bell broke, no one of them expected that its place would be made good by any one we could get of a similar weight; they are now very agreeably disappointed. I know of no one who does not consider it fully equal to the old bell, while some think it superior; all are well satisfied. Your bell gives a great volume of sound near to it, and we think can be heard as far; its key is lower than the old one. For the many favors received, and the gentlemanlike treatment shown from you to me, while in Troy, please accept my best wishes for the welfare and success in the business you both know so well.

[Wt. of bell, 740; key of B.]

GEORGE H. JONES, Agent, Victory Company, Victory Mills, July 21st, 1853, writes: It gives me great pleasure to say that, after a trial of a week, your bell gives us great satisfaction; it has a very fine, clear tone, and the prolonged vibration is superior to any bell I ever noticed.

[Wt. of bell, 984; key of A.]

REV. HENRY COX, Hillsdale, writes: We received the bell (for our new Methodist Episcopal Church) in good order, and I write to assure you that we are fully prepared to endorse your statement, "that a better bell, of the weight, never was cast." In fact, we have a bell on our church in the village, the weight of which is over 1,100,

and all declare that the bell on the new church is equal to it, and some believe it is even superior. You may, indeed, congratulate yourselves on the superiority of your castings to any in the country.

[Wt. of bell, 744; key of B.]

MR. J. C. GARTWAITE, Newark, N. J., writes: We have fully tested the bell on St. Paul's Chapel. It far exceeds our expectations for beauty of tone and capacity, and is superior to the other three bells I obtained of Mr. Meneely.

MR. M. S. BAILEY, Bouckville, N. Y., writes: After visiting many other foundries, and hearing bells that were widely advertised, I went to yours, and after hearing the bells became satisfied that you relied on your bells to advertise you.

Although I ordered a much heavier bell (1,004 pounds) than I was authorized, yet after hearing it our people would not let it return to Troy for twice its cost. Persons residing seven or ten miles off are telling us of having heard it distinctly at home. You need not send any more advertisements, for the bell will advertise you through this valley.

MR. J. OSGOOD, Morenci, Mich., writes: According to agreement, I drop a line to let you know the bell came through safe and sound, and I think I can safely say that we have got the best bell in the county. I think it fully equal to a sixteen hundred bell in Adrian. People come in daily, from six to eight miles in the country, saying that they heard it plainly at their homes; I have no doubt but it is heard ten or twelve miles. The people are well pleased with it.

[Wt. of bell, 779 lbs.]

REV. WM. WHITE BRONSON, Danbury, Conn., writes: The work of lowering our broken bell (from the foundry of Mr. Meneely), and replacing it by the new and sweet toned one from your establishment, was completed on Friday, and in accordance with my promise I hasten to inform you of the impression it has made upon an entire community. I have been again and again congratulated, by all denominations, upon what they regard as a public blessing, viz.: the possession of a fine toned bell—superior to any which our village can boast.

When Mr. Jones assured me that it would compete with heavier bells of a different make, I was not prepared (not having heard this) to be disappointed, as I have been, in the volume of sound; but the truth of his language has been verified—and this is admitted on all hands. Few were aware of the arrival of the bell, and the first time it was sounded, on its way up the spire, it attracted a general notice. All are impressed with the superior richness and beauty of tone—the clearness and length of the vibrations. Persons living in the immediate neighborhood of the church, and who, under ordinary circumstances object to the ringing of bells, have said that they cared not how often, or how long this was rung. Its qualities have been tested by superior judges in the musical profession, and all are satisfied—and this is not said in a spirit of flattery.

[Wt. of bell, 960; key of A.]

TRUSTEES OF M. E. CHURCH, Pittsfield, write: The bell which we purchased of you, for the Methodist Episcopal Church, we raised to its destined position as soon as it arrived. We were pleased with the smoothness of the casting, but more especially with the volume of sound, the prolongation of vibration, and the sweetness of tone. In all these respects we think it will compare favorably with the heavier and more expensive bells of our village.

LEVI CHILDS,  
JOHN M. HOLLAND, } Trustees.  
DANIEL C. MOREY,

[Wt. of bell, 1,995; key, E flat.]

P. H. WAGNER, ESQ., President of Board of Trustees of Fort Plain Seminary and Female Collegiate Institute, writes: Your bell is elegantly performing its functions in our cupola. We have in our churches two bells that exceed yours in weight by 300 to 400 pounds, but yours is decidedly the best in fullness of tone and vibration; and I am informed it can be heard as distinctly at as great a distance. This bell bears, and will continue to bear, a flattering testimonial in the Mohawk Valley to your enterprise and skill.

[Wt. of bell, 753; key of B.]

MR. EDWARD C. WOLCOTT, Sandisfield, writes: After a trial of nearly one year of that bell I purchased of you, I must say it has given good satisfaction to every one of the Society. I don't think there can be a better toned bell cast than ours. It is rung twice every day—at noon and 9 o'clock at night.

REV. H. W. DUCACHET, Philadelphia, Pa., writes: You would be pleased to hear the delight which all the citizens express when the bells are chimed; and they do great credit to you as their founders. You are at liberty to use my name as reference.

[Weight of bells—2,838 lbs., key of D.; 2,112 lbs., key of E.; 1,570 lbs., key of F. Sharp; 1,436, key of G.; 1,234, key of A.; 1,019, key of B.; 912, key of C.; 863, key of C. Sharp; 820, key of D.]

This is the chime represented at page 17. In ordering a bell for another church, August 14th, 1859, Dr. Ducachet says of this chime, "the chime continues to give the same high degree of satisfaction as at first, and you may continue to use my name as a reference."

REV. C. LA ROCQUE, St. Johns, C. E., writes: I am very happy that I can avail myself of this opportunity to let you know that the Catholics of St. Johns have enjoyed a truly merry Christmas. Our bells, which were put up last week in their proper place, the belfry of our church, were rung, for the first time, on the evening before last, to announce the great festival and solemnity of our Saviour's birthday. It lies not in my power to describe to you the amazing effect they have produced on the whole population of our village. For my part, when I bought them of you, I was confident that they would afford to myself and congregation a full satisfaction, but in so doing they succeeded far beyond my hope and expectation. Their perfect chording—their powerful and melodious tone—their beautiful matching of sound cannot be surpassed, I dare say, by any bells of the same size and weight. It remains only for me to wish that they may not hereafter prove deficient, or fail in any thing that might injure their excellent qualities of a bell. Till new account of the bells, or of any thing else, I have a real pleasure in wishing you success in your business.

[Wt. of bells, 1510, 1228, Key of F.]

REV. CHESTER L. FOTTE, Avon, Lorain Co., Ohio, writes: The bell gives general satisfaction; it compares very favorably with other bells in this part of the country. To particularize as to finish, the gentleman that assisted us in hanging it, who has done more or less of this business for some time, said that it had the best finish of any bell he ever saw. The tone is frequently spoken of as being excellent. An old gentleman, recently from England, speaking with me to-day about the bell, spoke in high terms of the tone. What has been said of the finish and tone, may be said of the volume of sound. The price, also, is satisfactory. I shall take pleasure in recommending persons wishing to get bells to purchase of you.

WEBSTER WILLIAMS, ESQ., Newark, Wayne Co., N. Y., writes: We received our bell (for St. Mark's Church) and immediately hung it, and have been using it ever since. It gives universal satisfaction, and is pronounced by all that it is the best toned bell in this vicinity, although it is the lightest one. The persons living next the church were afraid that a bell hung so near them would be an annoyance, but the tone is so rich that they would not now have it removed, and we are now satisfied that we done the best in leaving it entirely to your judgment.

MR. STILLMAN F. LEGG and others, East Candor, Tioga Co., N. Y., write: We have received the bell for our new church in good order (with the exception of the wheel being damaged a trifle, the flange being split off), and we are happy to inform you that we are all well satisfied, and have to acknowledge that it far exceeds our expectations in richness of tone and vibration. It is pronounced to be far superior to any bell in this part of the State. The bell arrived on the 6th inst., and the next day we raised it in the tower in good order. Please accept our best wishes for your welfare and success in business, and thanking you for the favors you have granted us.

REV. G. GROSS, Richville, writes: I can say, without exaggeration, that the bell which we purchased of you has obtained great celebrity in this vicinity as a good ringer. I have been much pleased to hear the voluntary commendations given to it,

not by the multitude merely, but by those who are judges of the sounds of bells.—One gentleman who is frequently in the city of New York, says that he never heard a better sounding one there, not excepting those on Trinity Church. It is my opinion that it is not surpassed by any bell in Northern New York, of its weight.

Much success to you, sirs, in your business, so long as you deal justly with all, and may your bells thus honestly sound far and near through the nation, and bespeak nothing in their chime but truth and righteousness, and I trust they will.

[Wt. of bell 615, key of C.]

J. CARL, ESQ., Secretary Vigilant Fire Co., York, Pa., writes: It gives me pleasure to inform you that our bell (purchased of you) was placed in its position last New Year's day, and every way proves satisfactory to the members of our company, and I can assure you it does its duty in raising an alarm when it gets going. There are bells in town larger than this, but none have been heard farther out in the country.

REV. W. C. MATTISON, Whitesville, Alleghany Co., N. Y., writes: The bell we purchased at your foundry has now been hung and in use eight months. It is what you recommended it to be, rich, clear tone. Having heard the Meneely bell at Wells-ville, and the Meneely bell at Andover, in this county, one weighing 1095, the other 800, we would not exchange *on even terms* (our weighing 625.)

MOSES C. CLEVELAND, ESQ., Southold, N. J., writes: Gentlemen—The bearer of this is my son, N. Hubbarly Cleveland; he being about to visit your city, I thought it a good opportunity to drop you a line concerning the bell we purchased of you last March. I am of the opinion that it cannot be beat of anything of its weight for sound or vibration; it is a beautiful clear tone, musical bell. I have just returned home from a little tour in New York, Connecticut and Massachusetts; I had the opportunity of hearing a number of bells, and in some instances inquired the weight of the bell. One in particular that the people seemed satisfied with, and thought it a good one, weighed over 1100 lbs., certainly was no better than ours, if as good; it was at Bergen, N. J. Accept my best regards, with my best wishes for success in your business.

MESSRS. WELLS & BEXBY, Wyalusing, Bradford Co., Pa., write: Yours of the 6th inst., acknowledging receipt of draft for balance of bell is at hand. The bell which we purchased of you last November for the Presbyterian Church in this place, continues to give the most perfect satisfaction, and we think it cannot be beaten for a 1200 lb. bell. Shall be happy if our names, as reference, can be of any use to you.

SILAS M. HOLMES, Detroit, Mich., writes: The bell you cast for the Fort Street Congregational Church, has been raised to its place in the tower, over 100 feet from the sidewalk; it has been used since the dedication of the church, which was on the 21st of September. Its powers have been tested, and as far as we can now learn, gives full satisfaction to the fair donors of our society, who were instrumental in raising the means for its purchase, as well as to the community who hear its chiming peals. Its tone is soft, clear and melodious, and can be distinctly heard at a distance. It is pronounced, by those not connected with our society, to be the best bell now in our city. Hoping that you will be as successful in all your future castings, I remain, respectfully, yours, &c.

In behalf of the Building Committee of the 1st Congregational Society, Detroit.

REV. H. M. THOMPSON, Portage, Wis., writes: I hasten to acknowledge the receipt of your beautiful bell, a most excellent one, giving good satisfaction, and being put ahead of the Meneely bell here, which is two hundred pounds heavier, by *all* good judges. The tone is the subject of all men's praises.

MR. R. C. CASEY, Sandy Hill, writes: The bell we purchased of you has been in use some eight months, and its tone is admired by all our citizens. It gives universal satisfaction, and we can with confidence recommend your bells to any churches who may be in want. Hoping you success in your business, &c.

GEORGE H. JONES, Chief Engineer, Newark, N. J., writes: The fire-alarm bell purchased of you for the city of Newark, has proved to be a superior bell, and gives universal satisfaction, being distinguished readily from all other bells in the city by its tone and power, and I consider it an indispensable appendage to our fire department.

[Wt. of bell, 1035; key of G.]

MR. THOMAS H. EVISTON, Milwaukee, writes: We are in receipt of your bell on the 29th ultimo. We hung it the same day, and have great pleasure in stating that it has given great satisfaction to the *Company and community* at large and especially our *Chief Engineer and Comptroller*. It is one of the best fire-alarm bells belonging to any company in our city, and gives the best report. I had the pleasure myself of ringing it the first time, and many spectators were waiting for the first alarm of the new bell, all of whom felt highly pleased at the tone of the new bell.

REV. EUGENE AUG'S HOFFMAN, Christ Church Rectory, Elizabethtown, N. J., writes: The bell which you sent to St. Stephen's Church, Milburn, has now been in use for nearly a year. It weighs but 1,308 lbs., and yet, being keyed on F, has the sound of a much larger bell. Its tone has given great satisfaction, being quite the pride of the village, and it rings so easily that a boy can manage it. Having had occasion, at different times to examine a number of bells, I take pleasure in giving my testimony to the perfection of the casting and finish.

S. C. PRICHARD, P. M., Liverpool, Ohio, writes: The bell sent by you to Tillatson & Richmond of this place, is now hung, and gives good satisfaction. They have a bell at York, eight miles from here, wt. 1240 lbs., made by your neighbors at West Troy; we would not exchange even with them, ours weighing 778 lbs. Wt. 442 lbs. in favor of your bell. We want another of 500 lbs., if you can send us one equally as good in proportion to the one sent to T. & R.

Mr. S. S. HARMON, Sonora, California, writes: Enclosed is a draft drawn on Christopher R. Robert, Treasurer of the A. H. M. Society, which will be paid on sight.

The bell, it is but just to you to say, is indeed a superior one. It realizes all the good things you said of it, *and more too*. Everybody in town is delighted with it, and it wakes the echoes of these mountains for four and five miles around. It is the largest and best toned bell in all the mines of California. Please acknowledge receipt.

JACOB HECKUT and SIMON WEST, Millersburg, Pa. write: Enclosed you will find a draft in your favor from the Harrisburgh Bank on the Am. Exchange Bank, New York.

We received the bell; it was brought to our place before we expected it, and we charged you with freight only to Harrisburgh. We think our bell is a very good one; every one is pleased with the sound of it, and it is pronounced far superior to the Meneely bell in our place.

MR. CHESTER SANDERSON, Ashfield, Mass., writes: The bell I purchased of you last March, and gave to the Second Congregational Society in Ashfield, Franklin county, Mass., exceeds our expectations and every thing of the kind in this vicinity. It has frequently been asserted by disinterested individuals, that its melody and sweetness of tone is superior to any bell they ever heard, and that its equal cannot be produced in the county of Franklin.

REV. GEORGE F. MAGOUN, Davenport, Iowa, writes: The bell cast by you for the Davenport Congregational Church, has given complete satisfaction. It has now been in use a little more than two months, and though only raised upon a temporary tower of wood in the rear of our present place of worship, answers the purpose admirably. The tone is rich, deep and mellow, and is spoken of in terms of unqualified praise, not only by our own people, who may be supposed to be partial to the "Sabbath going bell," whose call they follow—but by citizens and strangers. When it is permanently placed in a more suitable and better located tower, its excellent qualities will be brought out still better. We are more than satisfied with it; there is but one voice of gratification and pleasure.

[Wt. 2192 lbs., key E flat.]

MR. E. PERKINS, Fond Du Lac, Wis., writes: It gives me pleasure to say, that the Trustees of the Baptist Church are highly pleased with the bell you sent in August last, and are recommending your bells to other churches; and the community have complimented my taste in selecting bells. Many persons who lived near the church,

had objections to having a bell so near them, but since it is hung, the tone is so sweet and mellow, that these objections are all removed, and they have contributed liberally towards paying for it. I think the Presbyterian Church will want one in the spring; they will want one weighing about 1500 lbs.

REV. JOHN C. SMITH, Washington City, D. C., writes: It affords me much pleasure to say, that the bell recently purchased from Messrs. Jones & Company, of Troy, and placed in the belfry of the Fourth Presbyterian Church, is of very superior tone and finish, and universally admired as the sweet sounds are borne over our city. The bell is *the proof* that they are workmen that need not be ashamed. I will be gratified to learn that bells from the same foundry are heard all over our land.

P. J. BALTES, R. C. P., Belleville, Ill., writes: I am happy to inform you that the bells which you sent for our church have given general satisfaction. Their workmanship was examined by mechanics from St. Louis and Belleville, and pronounced superior to any thing of the kind which has appeared in this part of the country. Their vibrations are lasting; their tone solemn and pathetic, and together with the smaller bell which we already possessed, they make a very attractive chime. I think you will shortly have occasion to send some pretty large bells to St. Louis. I have the honor of being, gentlemen, your very humble and ob't servant.

REV. R. LANGLEY, Sparta, Wisconsin, writes: We have received the bell purchased of you for the M. E. Church in Sparta, and take pleasure in saying that the entire community are delighted with its clear, rich tone, and though weighing but 939 lbs. it is distinctly heard for five or six miles, and I would take pleasure in recommending your bells as of superior cast.

Rev. ROBT. S. HARRIS, Keyport, N. J., writes: As regards the excellent bell we bought of you last fall, weighing 1240 lbs., key of G., would say: the more we use it the better we like it. It has a sweet, musical sound, and powerful vibration. The Baptist clergyman of our village, (Rev. Mr. Slater, formerly of Rome, N. Y.,) remarked not long since to me, that our bell surpassed all of its size and heft he had ever heard. Our people are highly delighted with the bell, and would not part with it upon any consideration.

Mr. JACOB G. LAMBERT, Rhinebeck, N. Y., writes: We received our bell on the 21st, and hung it the next day, in good order, and I write to assure you that we are fully prepared to endorse your statement that it is A, No. 1. All are satisfied with its sweetness of tone and loftiness of vibration. We shall take pleasure in recommending your house for the manufacture of church bells of a superior quality.

MESSRS. SPAUNHORST & CO., St. Louis, Mo., write Enclosed we hand you draft, &c., \$314.18, as directed by our Rev. Jas. Patschowski. We have the bells up in the tower, and are permitted to say they give universal satisfaction so far, and will do credit to your establishment, and no doubt you will find some benefit, ere long, in the demand for bells, from your foundry, in this city.

MR. J. W. WILLETT, Yarmouth Port, writes: That bell was received in due time, and at once put in its place. It is, in all respects, perfectly satisfactory. If it fulfills what it now promises, we shall deem ourselves fortunate in that we have dealt with you. Should I again have occasion to purchase a bell, I shall certainly apply to you.

ELISHA GREENE, ESQ., Pella, Iowa, writes to our Agents: Messrs. Tillinghast, Lane & Buel, Agents Troy Bell Foundry.—Dear Sirs—The bell purchased of you, and cast at the Troy Bell Foundry, was hung in the cupola of our University Edifice, and has ever since been in daily and almost hourly use, and it has given *the most perfect satisfaction* in every respect. It is regarded by all who have heard it, as the finest toned bell in this part of the State. Its hangings are so perfect that, although its weight is about 1000 pounds, a child can ring it with perfect ease. Please say to all who are in want of bells that we regard those of Jones & Company as altogether unrivalled.

MR. WILLIAM PACKARD, Cummington, Mass., writes: The bell purchased of you, after two or three weeks' trial, gives very good satisfaction, and the Society are all greatly pleased with its rich, beautiful, sweet and musical tone, and its prolonged vibration. We send balance, &c.

MR. GEO. NICHOLS, Northfield Vt., writes: The bell was hung on Saturday after I was in your place, and now its clear, silvery tones may be heard for miles around. It gives good satisfaction to our people, and is heard further, and liked quite as well as the other bell (from Hooper's Foundry, Boston), which weighs 200 lbs. more.

MR. L. F. HITCHCOCK, Kendallville, Ind., writes: The bell is received, and gives *universal* satisfaction.

MR. FRED. A. ROSS, Huntsville, Alabama, writes: Through the liberality of a man of wealth, this Church has had presented to it, one of your *splendid* bells, 2100 lbs. Its tone is very fine, key E. I drop this line, to express my entire gratification with this noble work of your science in bell making.

REV. R. S. HARRIS, Bridgeton, N. Jersey, writes: The bell I bought of you when stationed at Keyport, increased in popularity with the people. A gentleman from Philadelphia, on a visit to Keyport, says, it is one of the sweetest toned bells he ever heard.

MR. ELIJAH SMITH, Northfield, writes: The bell I purchased of you for the M. E. Church in this place, has been in use some six months, and its rich tone and vibration are admired by all our citizens. It gives universal satisfaction. I think it one of the best toned bells of its size I have ever seen.

REV. C. LA ROCQUE, St. John's, Canada East, writes: I have paid the amount due you for the bell, to Mr. Evans, your Agent at Montreal. I had in my mind to address you a few lines, to give you an account of the bell, which in this very moment I hear ringing, and which gives both to myself and my congregation a *full satisfaction*. Your letter affords me a very favorable occasion so to do, and for this reason was very welcome, as it was to me, something like an order not to delay any more to accomplish my intention.

RT. REV. FREDERIC BARAGA, Bishop of Saut Ste. Marie, Mich., writes:—Messrs. Jones & Co., Bell Founders, Troy, N. Y.—Sirs: The beautiful bell we purchased at your establishment last Summer, gives us great satisfaction. When we first heard it, we were quite surprised at the richness and sweetness of its tone, and its length of vibration. We think it is as good, if not better, than any bell of its size in the country.

MESSRS. C. G. BRODT & HUGH THOMPSON, Knoxville, Iowa, write to Messrs. Tillinghast, Lane & Buel, Keokuk, Iowa, Agents Troy Bell Foundry—Gentlemen:—We take much pleasure in recommending the bell purchased for the M. E. Church of our town. It has given perfect satisfaction, and we can heartily endorse everything which has been said in approval and praise of the bells manufactured by the Troy Bell Foundry.

REV. T. V. PAPINEAU, St. Barthelemi, Canada E., writes: I beg you to accept my excuses for not having answered sooner your letter of the 15th of January, received during my absence, insurmountable difficulties have prevented us from sending you sooner, the price of the bells, but I am happy to say to you, that these difficulties have since been entirely removed, and by the 12th or 15th, we shall pay you in full. Have the goodness to be patient till that time. As to the bells that you have sent us, they are the finest that I have yet seen, and their harmonious concord could not be excelled in sweetness. They give complete satisfaction to all my parishioners, and the strangers who hear them. Their sound can be heard *nine miles* distant, and at a very favorable time, *twelve miles* distant. Your reputation hereabouts is established advantageously and durably.

MESSRS. SOUTHWORTH & WALLEY, Williamstown, Mass., write: We received the bell and bill as arranged, and enclose draft for the amount. We have a bell *large enough and good enough*. The community are loud in its praise. If we had selected for ourselves, we should not have done as well. Call and see us when you come out with our neighbors mammoth bell.

REV. L. K. SECRIST, Salona, Penn., writes: The bell furnished our new Church at Salona, gives entire satisfaction, and receives the unqualified praise of all who hear it. Another congregation of my charge want a bell of the same weight. Can you furnish it soon, and at what price? Please answer soon.

RUFUS HUBBARD, Esq., Supt. Public Schools, Keokuk, Iowa, writes: The bell purchased at your foundry through Messrs. Tillinghast, Lane & Buel, your Agents, and hung in the tower of the Public School House of our city, now in use over a year, is admired by all of our citizens. It gives universal satisfaction. Its tone is soft, clear and melodious, and can be heard at a great distance. It is my opinion that it is not surpassed by any bell in this section of the country.

MESSRS. WESTCOTT & PRAY, East Killingly, Conn., write: The bell is received, and now in the tower of the mill. You will please find check for the amount enclosed, and we will call on you again when we want in your line. We have much the nicest bell on our stream of 1000 looms. Its tone is admired by every one, and we cheerfully say it is the clearest, most sonorous bell in town, and are very much pleased with it.

MR. E. HARRIS, Providence, R. I., writes: The bell reached its destination last evening, and its introduction gives a very favorable impression on its visitors. Its shell appears to be full of music, and seems in haste to mingle its voice in the passing elements.

RT. REV. FREDERIC BARAGA, Bishop of Saut Ste., Mich., writes from Cliff Mine: The bell for the Rev. Mr. Thiele, Eagle Harbor, Lake Superior, was received some three weeks ago. It gives again full satisfaction. They hear it plainly five or six miles, although it is small. My bell of 510 lbs., at Saut Ste. Marie, is very much praised. They can hear it distinctly to *Garden River*, which is about *twelve miles* from the *Saut*.

We want now, another one of about 250 pounds, together with the hangings. Direct to the same Rev. Gentleman at Eagle Harbor.

MESSRS. E. T. WALDRON & JOSIAH ROSS, Bell Committee, Danvers Port, writes:—The bell you cast for us, has been raised to its place on the tower of the First Baptist Church, and we can truly say that it is a great improvement on the old one. Its powers have been tested, and as far as we can learn it gives *entire* satisfaction to all who were instrumental in raising the means for its purchase as well as the entire community. We think it the finest toned bell we have ever heard, and can cheerfully recommend the bells of your manufacture to any church that may be in want. Please accept our good wishes for your success in your business.

MR. IRA BEARD, Pittsfield, Vt., writes: Our bell has arrived, and was yesterday raised to its place on the Church, since which, its sweet, mellow tones, have been almost constantly vibrating among our hills. We think your statement to be correct, that this is a superior bell. Every one is speaking in its praise. Even those who could not be persuaded to take any interest in its purchase, are loud in their commendation of the bell. We shall ever esteem it a pleasure to recommend your bells to others.

H. HILL, Esq., Treasurer Oberlin College, writes: The bell has arrived, and is now in its place, and I believe every one is satisfied with its tone, and with everything about it.

Mr. L. H. SOVEREIGN, Bristol, Indiana, writes: The bell is a good one, and gives good satisfaction. Though so small a bell, (212 lbs.) I have heard it distinctly three miles.



Mr. C. M. WOODWARD, Agent Aurora Institute and Clark Seminary, Kane Co., Ill., writes: Our bell reached us in good order, except a break in the wheel. It is now in its place, and we are very much pleased with it indeed. Its tone is beautiful, and vibrations long, clear and distinct. It will be a real favorite in our young and flourishing city, and whoever will take the trouble or do himself the pleasure to listen to the sweet tones of our Seminary bell, will have little occasion to go elsewhere to purchase.

Z. PHILLIPS, Agent Troy University, Troy, N. Y., writes: I have great pleasure in assuring you that the bell of 1,200 lbs. weight, furnished by you to this Institution. and now sufficiently tested, is regarded by all as one of rare and unusual excellence. It is deep toned, full and sonorous, with powerful and long continued vibration, and great volume of sound, excelling in musical richness and beauty of tone. It is of the most perfect workmanship and finish, and in all the qualities of a good bell, cannot, I believe, be surpassed.

REV. W. W. SNELL, Rushford, Minn., writes: The bell came safely to hand, and was rung on the 1st. We are all *much pleased* with it. Its tone is very pleasant and clear. It has been heard *eight miles*.

REV. M. A. M. WIRZFELD, Pastor of St. Patrick's Church, Elizabethport, writes: Our bell was put in the spire last week, and I am happy to say that it is admired both by Catholics and Protestants. I shall do all in my power to recommend your establishment.

MR. C. W. CHURCHILL, Le Roy, Pa., writes: The bell is in its place, and we realize all that we anticipated in its qualities. There is but one expression, and that is, *all* are entirely satisfied. The bell will recommend itself.

REV. SERGE DE STCHOULEPNIKOFF, Pastor of St. Mary's, Dansville, N. Y., writes: The bell you sent us by boat arrived here safely last Wednesday night, and is already in its place. It is a *splendid* one, and was heard yesterday at a distance of eight miles. Everybody in town admires its material and sound, and I feel most happy that it was my good luck to order our bell from your establishment.

MR. JOHN E. RIDER, of Portsmouth, N. H., writes: The bell gives great satisfaction. Its great power, and beautiful tone, prove you to be *masters* of your business.

MESSRS. W. GURLEY & CLARK, Bell Committee of the North Baptist Church, Troy, N. Y., writes: The church bell purchased from you for the North Baptist Church, has been in use for several weeks, and we take pleasure in saying that the favorable estimate of its qualities entertained by the committee at the time of its purchase, is fully justified by the general satisfaction felt with it by the congregation. In a city possessing so many fine toned bells as ours, the public ear is educated, and a *new bell* is so closely criticised, that a verdict so favorable is peculiarly gratifying to us, and we have no doubt must be equally agreeable to you.

REV. WALTER CHAMBERLIN, Perth Amboy, N. J., writes: You will undoubtedly remember my visit to your place to purchase a bell for Frenchtown, which gave the *very best* of satisfaction, and resulted in your selling another one to the Baptist Church. We are trying to build a church in Perth Amboy, and undoubtedly will want a bell. Please send us your circular.

REV. JAMES LYNCH, Pastor St. John's Catholic Church, Middletown, Ct., writes: It gives me pleasure to bear testimony to the excellent qualities of the bell you have erected for us. *It realizes all our expectations*. Its tone is pleasing, and as powerful as could be expected from any bell of its weight. Wishing you all the success which your skill as bell founders and your honorable business principles merit, I am very respectfully yours.

MR. D. B. JUDSON, Kingsboro', N. Y., writes: The bell gives general satisfaction.

REV. PIERRE BEAUDOIN, Pastor Notre Dame Catholic Church, Bourbonnois Grove, Ill., writes: It is with the greatest pleasure I send you the price of a bell that gives us so much satisfaction. It possesses a sweet, tenorous tone, and is heard a long distance. I am much obliged to you for the transactions which you have with me.

REV. SAMUEL DURBOROW, Pastor Church of the Evangelists, Philadelphia, Pa., writes: It seems right and proper to say to you that the bell which you furnished for the Church of the Evangelists was put in its place in the tower last week. On Easter Sunday morning at sun-rise it rung out its sweet tones, very much to the gratification of good church people, but rather annoying to the slumberers in Zion. We are all very much pleased with the bell. It seems to give universal satisfaction. I thank you personally for the interest you took in getting us so good an instrument, and also for your promptness in filling the order.

REV. SAMUEL ADSIT, Palmyra, N. Y., writes: The bell is all that could be desired. *A perfect charm.* The more I hear it, the more I admire its rich, solemn calls to devotion, and a higher Christian life. I think its deep, far-reaching tones will speak loudly in its praise in this region.

MR. H. H. HEMENNAY, Treasurer St. Luke's Church, Lansing, Iowa, writes: We are much pleased with the bell. It is a fine tone, and will be entirely satisfactory. It is certainly the best bell in Northern Iowa.

MR. F. R. GILBERT, Millersburgh, Pa., writes: We received the bell and have put it in the steeple, and every person is pleased with the tone, and they all with one accord say they never heard a finer toned bell any where. There is quite a contrast between this and our Amalgam bell of 1000 lbs. which we had, and the people are all satisfied the Amalgam bells are a humbug. They offered us a big price to take another Amalgam bell, but our people, with one accord, cried "Away with them, we have had enough."

MR. J. HURD, Charles City, Iowa, writes: The bell is received. *It is a splendid bell*, and I feel sure will give entire satisfaction to all.

REV. E. H. BUHR, Napierville, Ill., writes: The bell has been rung for two Sundays, and gives general satisfaction. Members of my church have told me they heard it at eight (8) miles distance.

REV. W. H. E. BULLOCK, Bridgewater, writes: The bell has given great satisfaction. Its tone is all we could wish for. Its clear, piercing tone is just suited for the situation of the church, surrounded as it is by woods. Your establishment shall always be recommended by me.

DR. C. T. HARRIS, Delavan, Wis., writes: The bell gives universal satisfaction; for smoothness and beauty of tone it is admitted to surpass any bell with which we are acquainted in the State. In short, we are thus far *well suited*.

REV DR. DUCACHET, Rector St. Stephen's Church, Philadelphia, Pa., writes: No bell can be better than the grand chime of nine which you made for St. Stephen's Church, and which we have had in our tower more than eight years with undiminished satisfaction. I have heard many English and Spanish bells, but *none* surpass yours. We have three chimes in this city, two of them English, and the one cast by you; the former do not compare with ours. Besides the chime of nine at our church, you have furnished three other bells on my order, every one of them perfectly satisfactory. The larger bell lately sent by you for our asylum is superb. It is music to all the country around it. I shall certainly never send to England for a bell when I can get one from your firm.

MR. HENRY FOWLER AND COMMITTEE, Danversport, Mass., writes: The bell you recast for us gives universal satisfaction. Its tone is clear and musical, and by many is preferred to that of the old bell. Citizens living in other parts of the town, and accustomed to hear other bells, do not hesitate to say that Jones & Co. have fur-

nished the best church bells in this vicinity. The committee acknowledge the promptness of your firm in this as well as your former business transactions with them.

MR. CHAS. LANGDON, Castleton, Vt., writes: It gives me great pleasure to acknowledge your courteousness and fidelity in executing our order. The bell gives universal satisfaction. It has been heard a distance of seven miles in quite unfavorable weather, how much farther I cannot say. But wherever it is heard it will speak volumes in your praise through its sweet and cheerful tones.

MR. D. W. STICKWELL, Aurora, Ill., writes: Your bell has come to hand, and hangs to-day in the belfry. I think it a very fine bell, and it will give entire satisfaction to every one.

REV. S. ORCUTT, Patchogue, Long Island, N. Y., writes: Our bell is admired by all, and gives great satisfaction in tone and the distance it is heard. I shall ever favor your foundry.

REV. JAS. HULRIS, Milford, C. W., writes: Our bell arrived in good order. We like it very much. It has been heard six miles, and is what we call a good bell.

REV. THOS. W. FYLES, Brome Woods, E. T. Canada, writes: The bell reached me in safety, and gives satisfaction. I am much obliged for your punctuality.

MR. J. E. RIDER, Portsmouth, N. H., writes (concerning a fire alarm bell for the city of Portsmouth): I have delayed writing to you in regard to the bell, for the reason I wished to have a general expression on the part of our citizens in regard to the tone of the bell. It has been rung now for some time, and I have never heard the first word of fault found with it. When it arrived the casting was pronounced *very superior* by our founders, and after it was in the tower, our citizens were greatly surprised to hear its *great volume of power*, and the vibration was *splendid*. Its tone was rich and clear, and taking into consideration the prejudice in favor of Hooper's bells, of which we have a number in this city, I can only say it has achieved a great victory. No one seems tired of hearing it. I have heard many bells in different parts of Europe and this country, and I can assure you that I consider the tone of the bell we had of you fully equal to any of the old English bells, some of which are considered by travelers as gems of the old founders. If any one wishes to purchase a bell I shall certainly advise them to go to Jones & Co., and if any more of our bells should break you need have no fears of the purchasers going any where else.

MR. GEO. R. AMES, Mendota, Ill., writes: The bell came to us in good order, and is now hanging in the tower of the church. Standing in the midst of the great prairies of Illinois, its sweet, full sounds vibrate through the distance to the satisfaction of *all*, and to the credit of Messrs. Jones & Co., Troy, N. Y.

J. C. DEITZ, ESQ., Anamosa, Iowa, writes: I think the bell will give entire satisfaction.

S. S. CADY, ESQ., Jamestown, N. Y., writes: I have something to say to express the perfect satisfaction the bell gives to all. Not a word except in its praise has been heard. Its tone is perfectly pleasing to every ear.

REV. E. N. BARTLETT, Oberlin, O., writes: I have the pleasure of informing you that the bell furnished by you for the Congregational Church at Four Corners, Huron Co., Ohio, has been received and placed in the church tower, and its musical tones give very general satisfaction.

MR. O. RICHARDSON, Roxbury, Vt., writes: The bell you sent us arrived all right, and is now in its place, and I am happy to say it gives perfect satisfaction. Every one speaks in its praise.

REV. H. C. HUMPHREY, Purdy's Station, N. Y., writes: The tone gives the highest satisfaction. I have not heard of a dissent from the universal praise accorded to it.

WM. S. GRAY, ESQ., Windsor, N. C., writes: The bell arrived safely, and has been put into the steeple, and gives general satisfaction to all the members of our church. I think it will prove the best in town every way. Thanking you in the name of the church for the great promptness with which it was cast, I remain, &c.

MR. S. P. HALLECK, Oriskany, N. Y., writes: The bell I think cannot be beat.

REV. JAMES T. WILSON, Mifflinsburgh, Pa., writes: The bell came to hand all right, and was hung on Wednesday, and renders universal satisfaction. It is a great source of pleasure to the congregation, and reflects great credit upon your establishment. *We think we have the best bell in the town.* We are under many obligations to you, &c.

REV. L. MALON, Elyria, Ohio, writes: The bell has arrived safe. It gives satisfaction.

JNO. M. BONHAM, ESQ., Franklin, Pa., writes: With the bell on our church, now hung and fully tested, we are all as well pleased as can be. Its tone is pure, distinct and smooth. *It far surpasses any bell in this community.* We do not doubt it will be the means of bringing you several new orders from other churches now being erected here, and perhaps from the country.

GEORGE S. BOND, ESQ., Charlestown, N. H., writes: The bell arrived safe and sound, and I think it will please us very much.

MR. J. C. HOWARD, Union Center, N. Y., writes: The bell we ordered is received. We raised it into the tower yesterday. I believe the people are well pleased with it.

REV. A. C. MOREHOUSE, Windham Center, N. Y., writes: One of your bells on my former charge is, I think, one of the best I have ever heard for the price and weight.

REV. A. LÖHNER, Blairstown, Iowa, writes: I got a bell of your firm some years ago, it is the best bell for its weight I ever saw.

REV. G. J. DU BOIS, Big Flatts, N. Y., writes: Gentlemen, permit me to *congratulate* you on your *success* as *Bell Makers*, and on your promptness and dispatch as business men. Your fine bell and mountings reached here in safety on Wednesday. Our people are perfectly delighted with the bell, and all who have heard it pronounce it the finest toned of any they ever heard.

REV. U. ARCHAMBAULT, St. Barthélemé, C. E., to our Agent in Montreal, J. H. Evans, Esq., writes: The Chime of Bells furnished by you for my church, and made by Messrs. Jones & Co., Proprietors of the Troy Bell Foundry, are without exception the finest toned bells I ever heard. The respective weights are 1991 lbs., 1191 lbs., 750 lbs., and are in perfect musical accord, and the bells as a whole, reflect great credit on Messrs. Jones & Co.

REV. H. S. CARD, North Hector, N. Y., writes: The bell you sent us is received in good order, it is now in its place, and the people are much pleased with it.

GEORGE A. GUERNSAY, ESQ., Susquehanna Depot, N. Y., writes: We have the bell hung, and are much pleased with it. The tone, &c., is quite satisfactory.

REV. J. J. LEWIS, Syracuse, N. Y., writes: The bell gives *very good* satisfaction, and has been highly commended.

J. W. MOORE and CHAS. R. PULTZ, Bell Committee, Rhinebeck, N. Y., write: The bell you cast for us has been raised to its place on the tower of the Third Evangelist Lutheran Church in this place, its powers have been tested, and as far as we learn it gives entire satisfaction to all the community about Rhinebeck. Please accept our good wishes for your success in your business, &c.

MR. WM. A. ELDEN, Bendersville, Adams Co., Pa., writes: The bell you sent us is an excellent one, *beautiful in tone*, it has been heard a distance of five miles along the mountain, and will reflect credit on you as manufacturers. Yours, with many greetings, &c.

C. P. WILLIAMS, ESQ., Shelburn, Vt., writes: The bell was raised to belfry Monday. I call it a good bell, and the majority like it, and are satisfied with it. Hoping you will never make a worse bell than ours, I remain, &c.

MR. N. L. BARKER, Edinburgh, N. Y., writes: The bell so far gives universal satisfaction.

REV. H. RIEVERS, Muskegon, Mich., writes: Some few years ago I bought a bell of your firm when I was at Grattan, Mich., and it satisfied all who had seen and heard bells. I want another for this place, &c.

C. H. HARDING, ESQ., Bradford, Vt., writes: The bell has been received, and is being hung. So far as *workmanship* is concerned it gives the *highest satisfaction*.

REV. L. MALON, Elyria, O., writes: Our bell gives general satisfaction. It is the *best* sounding bell in town.

JOHN WALSH, ESQ., Rouses' Point, N. Y., writes: We have received our bell. It seems to give general satisfaction, and I am glad of it, &c.

A. M. DICKEY, Esq., Bradford, Vt., writes: Please accept my thanks for your promptness in filling my order for bell. I am happy to inform you that the society are perfectly satisfied with its tone and mechanism.

JOHN C. THOMPSON, ESQ., Redfield, N. Y., writes: We have now fully tested the bell which you furnished us, and must say it is the *best bell* we ever heard for its weight, and for beauty of casting *surpasses* anything we know of in the bell line. Its surface is smooth as glass, and the color of the bell indicates the fact that only the best and purest materials has been used in its composition. Wishing you every success which your strict business principles merit, I am, &c.

REV. T. Q. GAFFNEY, East Rutland, Vt., writes: The bell and invoice were delivered on Monday. I delayed my acknowledgment that I might hear it ring from the place set up for it. I have now the pleasure of assuring you that in clearness, sweetness, and for its size, fulness of sound, it more than realizes my expectations from your very high recommendations, &c.



## HISTORY OF BELLS.

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There is a history connected with the art of the manufacture of bells which is worthy of note to any one interested in the development and improvement of the mechanical arts, to meet the requirements of man, and to gratify his desire for excellence and perfection. True, the founding of bells is not a process as complicated as the manufacture of a watch or a steam engine, yet its capacity or power for the accomplishment of the result designed—producing agreeable and pleasing vibrations when struck with the hammer—requires the exercise of skill and the nicest discrimination, as the delicacy, exactness, and perfect adjustment of that most sensitive of all human organs or senses, the EAR, is to be pleased or displeased by its *sound*; and in its capacity or power to produce perfect, or even agreeable sounds, lies its whole utility. The first manufacture of these sonorous instruments was necessarily very imperfect—little better than common kettles, indeed—since nothing was known of that nice and exact combination of metals prepared and proportioned with reference to the effect of each and all upon the sound produced; the shaping of the instrument to modify and improve the vibrations; the degree of elevation, and kind of tower—all affecting the sound. It was left to the genius of a later day to develop these scientific facts, and their relation to the efficiency and construction of the bell.

As to the exact origin of bells history has given no definite account. The sonorous properties of certain metals and combinations of metals was known at a very early period, though the bell as known to our time is not an instrument of so great

antiquity. Small tinkling instruments are mentioned by the old Hebrew writers as having been used as ornaments or appendages to the dress or tunics worn by the high-priests, and persons of distinction, but as to their shape nothing definite has been recorded. The origin of the name is from the old Saxon word *bellan*, to bawl or bellow. The Hebrew word translated by the English word bell is susceptible of other translations. It meant any instrument that made a tinkling sound, and hence the instruments attached to the robes of priests to give notice of their approach to the sanctuary, were probably ornamental contrivances, which made a noise when they were moved. In those instruments, however, whatever shape they may have had, we have the origin of the principle of the bell. The bell is used to this day, in Roman Catholic countries, for a similar purpose to that recorded in scripture; especially is it now used by the priest as he proceeds to render the rite of extreme unction to the soul that is passing away; and so when the bell is tinkled, in administering the sacrament, by the same priest, it is in pursuance of a custom founded on the ancient Hebrew use of it. Perhaps no instrument of music (for it is ranked by musicians among the musical instruments of percussion) is more intimately associated with the religious and imaginative, as also with the most joyous and the saddest feelings of mankind. A quaint old writer has described their threefold duties thus:

To call the fold to church in time,  
We chime.  
When joy and mirth are on the wing,  
We ring.  
When we lament a departed soul,  
We toll.

Those small bells were used in the early ages for civil, military and religious purposes, and bells of a larger make are extensively used in our day for civil and religious purposes also. The first use of bells in christian churches to call people to prayer or service, of which we have any record, was by St. Paulinus, in Campania, about the year 395 of the Christian



Era, after which it was gradually introduced into all churches of every denomination in the world. More or less sacredness, superstition and importance were attached to them and their use. By the Roman Catholics they are solemnly blessed, as they are consecrated to their holy work of summoning worshippers to their religious rites. From the circumstance of the bell receiving a name, and being washed with holy water, the ceremony is frequently called the baptism of bells. No form of baptism, however, is used. There is something poetical, at the same time playful, in the custom of giving the bell sponsors, who are usually persons who have presented the bell to the church, or who contribute handsomely to the expense of purchasing it, at the time of blessing. Chrism and oil are used in the ceremony of benediction, and in all the more solemn consecrations of utensils employed in the divine service. This consecration of bells dates back to a very early period. In Charlemagne's Capitulary of 787, we find the prohibition "*ut cloccæ baptizentur*;" and in the old liturgies of the Catholic church is a form of consecration directing the priests to wash the bell with water, anoint it with oil, and mark it with the sign of the cross, in the name of the Trinity. The practice of naming bells was also an early one—as far back as 968, when John XIII named the great bell of the Lateran church, for himself, John. In Catholic churches is now in constant use what is denominated the Sanctus bell, a small instrument rung by an attendant just previous to the elevation of the Host, in order to fix the attention of the people. It was formerly larger and hung in the outer turret of the church, and was rung at the words "*Sancte, sancte, sancte, Deus Sabaoth*," when all the people within hearing, in or out of church, were enjoined to bow in adoration. The Ave Maria bell was rung at fixed hours to remind all to offer supplication to the Virgin, and to mark the hours of beginning and cessation of labor. The Vesper bell, immortalized by poets, was the call to evening prayer, the Complin bell summoned the people to the last religious service of the day. The passing bell was rung among the ancient customs that those who heard it might pray for the soul that was leaving this world, and this practice gave rise to the superstition

which gives the bell a mysterious connection with departed spirits; and the belief has extensively prevailed that the evil spirits, waiting to seize the stranger about entering their domain are driven off in terror at its sound, and leave the neophyte an entrance free and unobstructed to the world of spirits, and at the gate of his own choosing. From this old custom probably is derived that of tolling bells at funerals, practiced in our day; also that practiced in many localities of tolling the bell immediately after death, the number of times of striking it indicating the age in years of the deceased. It is also rung while the procession is marching to the grave and the corpse is being lowered into the ground. The bell was also used in Catholic churches during the ceremony of excommunication. There were almost numberless superstitions in connection with the bell many centuries ago: disconcerting evil spirits, preventing eclipses, averting tempests, preventing infections, abating lightnings, and many other things equally absurd, as they were supposed to be caused by evil spirits, who would be driven off by the sound of the bell.

Some historians tell us that William the Conqueror introduced into England from France the custom of ringing the Curfew bell, which "tolled the hour of parting day." Others say the good King Alfred introduced the custom. It consisted of ringing a bell at eight or nine o'clock in the evening, when every one was expected to extinguish fire and lights in the house and retire. It was called Curfew from this latter circumstance, which is from the French words *couvrir feu*, cover fire. Hence, when at a later day, the "Curfew tolled the knell of parting day" there was no reason why, in its origin or associations, one should feel especially sad. This practice of ringing a bell at a certain hour was not peculiar to England, for it prevailed to a considerable extent in all the countries on the continent; as the buildings were generally of wood, it was intended, at a later period, as a precaution against fires, which were common, and the arbitrary law of compelling all to retire was abolished or gradually abandoned. The passing and curfew bells are still represented in some New England and New York villages; the one, as a funeral procession slowly wends its way

to the graveyard, and the other, by the nine o'clock bell, which hints to all the time for visiting to cease, and preparations to be made for retiring—an hour later than in the time of William the Conqueror, it is true, but yet, in general, an hour or two too early, even for the quiet residents of New England towns.

As a signal to call people together to join in any concerted action, the bell has been used from remote times; the feast of Osiris was announced by the ringing of bells, and the same sound to this day notifies hungry mortals the time to join in satisfying their appetite. The Romans announced the time of bathing by ringing of bells; and the early Christians made use of the method to designate the hour of prayer, a practice kept up by Roman Catholics in the ringing of the *Angelus* at morning, noon and night, at the sound of which Catholics are expected to join in this rite; and by the Protestant, in the church-going bell, which summons him to devotion. In Britain bells were applied to church purposes before the conclusion of the seventh century, in the monastic societies of Northumbria, and even as early as the sixth in those of Caledonia. They were therefore used from the first erection of parish churches. Those of France and England appear to have been furnished with several bells. In France bells were sometimes made of iron; and in England, as formerly at Rome, they were frequently made of brass. In times of public danger, the bells were rung, and signal fires were burned to alarm the country; sometimes, also, they were employed to alarm the public enemy as well, under the impression, apparently, that they would be inspired with the same terror as the evil spirits waiting for their victim. In the year 610, when Clothaire II, King of France, besieged Sens, Lupus, the Bishop of Orleans, ordered for this purpose the bells of St. Stephen's to be rung; and as late as 1457, Calixtus III employed the same device as a security against the dreaded Osmons, who considered bells their most dangerous foe; whence they were at this time called Turk's bells. Among the Greeks, those who went the nightly rounds in camps or garrisons, carried with them little bells, which they rung at each sentry box, to see that the soldiers on watch were awake. A codonophorus, or bellman also walked in funeral

processions, some space in advance of the corpse, not only to keep off the crowd, but to advertise the *flamen dialis* to keep out of the way, lest he should be polluted by the sight, or by the funerary music. The priest of Proserpine at Athens, called *hierophantes*, rung the bell to call the people to sacrifice. There were also bells in the houses of great men, to call the servants in the morning. Zonaras informs us that bells were suspended along with whips on the triumphal chariots of victorious generals, in order to put them in mind that they were still liable to public justice. Bells were also put on the necks of criminals going to execution, that persons might be warned by the noise to avoid so ill an omen as the sight of the hangman, or the condemned criminal, who was devoted to the *dii manes*. We find in history mention of bells on the necks of brutes; and taking them away was construed theft by the civil law. The custom in the United States of putting bells on cows, sheep, &c., to prevent their straying away, doubtless grew out of this practice of the ancients.

In our cities alarm bells are rung to an extent our ancestors never dreamed of; and their sound, grown familiar to our ears, no longer inspires terror, as it calls the firemen to their duties. In the quaint old rhymes of the monks, and the songs of the poets, which commemorate the uses of the bell, this modern application of it is not alluded to. Their various early uses have been summed up in the following old distich:

Laudo Deum verum, plebem voco, congreco clerum, Defunctos ploro, pestem fugo,  
festa decoro.

Schiller, however, in his celebrated "Song of the Bells," the motto of which is,

Vivos voco, mortuos plango, fulgura frango,

does not omit to notice this fear-inspiring sound. Indeed, in this beautiful poem, all the joys, sorrows, pangs, emotions, terrors, and blessings attendant on humanity, in connection with the part which the bell plays are most vividly portrayed. Even the description of the various operations of mixing and fusing the alloy, and pouring the liquid metal into the mould prepared to give it its shape, are happily interwoven with all those uses

which the bell is thereafter to serve. Each phase of the process suggests its appropriate phase of human life; and the story of the bell draws forth those admirable pictures of the infant presented at the baptismal font—of the maiden at the altar—of the sweet ministrations of maternity and home—of man's ambition and woman's love—such as the hand of a master workman alone can produce. This poem is so touchingly beautiful we reproduce a portion of it here :

“What we are forming in the mould  
By dint of hand and melting flame,  
High in the church-tower shall be tolled,  
And far and wide our work proclaim.

To distant days it shall remain,  
Its notes on many an ear shall fall;  
Its chimes with sorrow shall complain,  
And ring abroad devotion's call.

“Whatever to us mortals here  
A shifting destiny e'er brings,  
Is struck upon its metal clear  
Which to all ears the lesson rings.”

“Clear and full with festal sound,  
It hails the lovely infant child,  
First entering on his earthly round,  
Borne in the arms of slumber mild.

“When the manly and the fair,  
When strength and beauty form a pair,  
Then rings it out a merry song;  
Lovely in the young bride's hair  
Shines the bridal coronal;  
While the church-bell-chimes so fair  
Summon to the festival,

From the dome  
Heavy and long  
Sounds the bell  
A funeral song.  
Solemnly, with measured strokes, attending  
Weary wanderer on his last way wending.”

None the less beautiful, though of a different vein of sentiment, is the poem of Edgar A. Poe, entitled "The Bells."

Hear the sledges with the bells—  
    Silver bells!  
What a world of merriment their melody tells.  
    How they tinkle, tinkle,  
    In the icy air of night!  
While the stars that over sprinkle  
All the heavens, seem to tinkle  
    With the crystalline delight;  
    Keeping time, time, time  
    In a sort of Runic rhyme,  
To the tintinnabulation that so musically wells  
    From the bells, bells, bells, bells,  
    Bells, bells, bells—  
From the jingling and tinkling of the bells.

## II.

Hear the mellow wedding bells,  
    Golden bells!  
What a world of happiness their harmony foretells!  
    Through the balmy air of night  
    How they ring out their delight!  
    From the molten golden notes,  
    And all in tune,  
    What a liquid ditty floats  
To the turtle dove that listens, while she gloats,  
    On the moon!  
    On, from out the sousing cells,  
What a gush of euphony voluminously swells!  
    How it swells!  
    How it dwells  
    On the Future! how it tells,  
    Of the rapture that impels  
To the swinging and the ringing  
    Of the bells, bells, bells,  
Of the bells, bells, bells, bells,  
    Bells, bells, bells,  
To the rhyming and the chiming of the bells!

## III.

Hear the loud alarum bells—  
    Brazen bells!  
What a tale of terror, now, their turbulency tells!  
    In the startled ear of night  
    How they scream out their affright!

Too much horrified to speak  
 They can only shriek, shriek  
     Out of tune,  
 In a clamorous appealing to the mercy of the fire,  
 In a mad expostulation with the deaf and frantic fire  
     Leaping higher, higher, higher,  
     With a desperate desire,  
     And a resolute endeavor,  
     Now—now to sit or never  
 By the side of the pale-faced moon.  
     Oh the bells, bells, bells,  
 What a tale their terror tells  
     Of despair,  
     How they clang, and clash, and roar  
     What a horror they outpour  
 On the bosom of a palpitating air!  
     Yet the ear it fully knows,  
     By the twanging,  
     And the clanging,  
 How the danger ebbs and flows;  
 Yet the ear distinctly tells,  
     In the jangling,  
     And the wrangling,  
 How the danger sinks and swells,  
 By the surging or the swelling in the anger of the bells—  
     Of the bells—  
     Of the bells, bells, bells, bells,  
     Bells, bells, bells—  
 In the clangor and the clamor of the bells!

## IV.

Hear the tolling of the bells—  
     Iron bells!  
 What a world of solemn thought their monody compels!  
     In the silence of the night,  
     How we shiver with affright,  
 At the melancholy menace of their tone!  
     For every sound that floats  
     From the rust within their throats  
     Is a groan.  
 And the people—oh the people—  
 They that dwell up in the steeple,  
     All alone,  
 And who, tolling, tolling, tolling,  
     In that muffled monotone,  
 Feel a glory in so rolling  
     On the human heart a stone—

They are neither man nor woman—  
 They are neither brute nor human—  
     They are Ghouls :  
 And their king it is who tolls ;  
 And he rolls, rolls, rolls,  
     Rolls  
     A pæan from the bells !  
 And his merry bosom swells  
     With the pæan of the bells !  
 And he dances, and he yells ;  
 Keeping time, time, time,  
 In a sort of Runic rhyme,  
     To the throbbing of the bells—  
     Of the bells, bells, bells—  
     To the sobbing of the bells ;  
 Keeping time, time, time,  
     As he knells, knells, knells,  
 In the happy Runic rhyme,  
     To the rolling of the bells—  
 Of the bells, bells, bells—  
     To the tolling of the bells,  
     Of the bells, bells, bells, bells—  
     Bells, bells, bells—  
 To the moaning and the groaning of the bells.

The ringing of bells, on account of the associations, arouses feelings of patriotism in the breast. John G. Whittier, that author of many national lyrics, on hearing the bells ring for joy on account of the passage of the constitutional amendment abolishing slavery in the United States, expresses his feelings in the poem, "Laus Deo."

    It is done !  
     Clang of bell and roar of gun  
 Send the tidings up and down.  
     How the belfries rock and reel,  
     How the great guns, peal on peal  
 Fling joy from town to town !

    Ring, O bells !  
     Every stroke exulting tells  
 Of the burial hour of crime.  
     Loud and long, that all may hear,  
     Ring for every listening ear  
 Of Eternity and Time.



Let us kneel :  
 God's own voice is in that peal,  
 And this spot is holy ground.  
 Lord, forgive us ! What are we,  
 That our eyes this glory see,  
 That our ears have heard the sound !

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Ring and swing  
 Bells of joy ! on morning's wing  
 Send the song of praise abroad ;  
 With a sound of broken chains,  
 Tell the nations that He reigns,  
 Who alone is Lord and God.

Who has not heard of the Christmas bells ? Henry W. Longfellow, one of America's most brilliant and beloved poets, has made them immortal :

I heard the bells on Christmas Day  
 Their old, familiar carols play,  
 And wild and sweet  
 The words repeat  
 Of peace on earth, good will to men !

And thought how, as the day had come,  
 The belfries of all Christendom  
 Had rolled along  
 The unbroken song  
 Of peace on earth, good will to men !

Till, ringing, singing on its way,  
 The world revolved from night to day,  
 A voice, a chime  
 A chant sublime  
 Of peace on earth, good will to men !

Then from each black, accursed mouth,  
 The cannon thundered in the South,  
 And with the sound  
 The carols drowned  
 Of peace on earth, good will to men !

It was as if an earthquake rent  
The hearth-stones of a continent,  
And made forlorn  
The households born  
Of peace on earth, good will to men !

As in despair I bowed my head ;  
"There is no peace on earth," I said ;  
"For hate is strong  
And mocks the song  
Of peace on earth, good will to men !"

Then pealed the bells more loud and deep :  
"God is not dead ; nor doth he sleep !  
The Wrong shall fail,  
The Right prevail.  
With peace on earth, good will to men !"

Alfred Tennyson, the English Poet Laureate, burst forth in the following strain of admiration to the ringing out of the bells :

Ring out, wild bells, to the wild sky,  
The flying clouds, the frosty light ;  
The year is dying in the night ;  
Ring out, wild bells, and let him die.

Ring out the old, ring in the new,  
Ring, happy bells, across the snow :  
The year is going, let him go :  
Ring out the false, ring in the true.

Ring out the grief that saps the mind,  
For those that here we see no more ;  
Ring out the feud of rich and poor,  
Ring in redress to all mankind.

Ring out the slowly dying cause,  
And ancient forms of party strife ;  
Ring in the nobler modes of life,  
With sweeter manners, purer laws.

Ring out the want, the care, the sin,  
The faithless coldness of the times ;  
Ring out, ring out my mournful rhymes,  
But ring the fuller minstrel in.

Ring out false pride in place and blood,  
The civic slander and the spite ;  
Ring in the love of truth and right,  
Ring in the common love of good.

Ring out old shapes of foul disease,  
Ring out the narrowing lust of gold ;  
Ring out the thousand wars of old,  
Ring in the thousand years of peace.

Ring in the valiant man and free,  
The larger heart, the kindlier hand ;  
Ring out the darkness of the land,  
Ring in the Christ that is to be.

### ELECTRICAL BELLS.

Electrical bells are used in a variety of entertaining exhibitions by electricians. The apparatus, which is originally of German invention, consists of three small bells, suspended from a narrow plate of metal, the two outermost by chains, and that in the middle, from which a chain passes to the floor, by a silken string. Two small knobs of brass are also suspended by silken strings, one on each side of the bell in the middle, which serve for clappers. When this apparatus is connected with an electrified conductor, the outermost bells suspended by the chains will be charged, attract the clappers, and be struck by them. The clappers, becoming electrified, will likewise be repelled by these bells, and attracted by the middle bell, and discharge themselves upon it by means of the chain extending to the floor. After this they will be again attracted by the outermost bells, and thus, by striking the bells alternately, occasion a ringing, which may be continued at pleasure. Flashes of light will be seen in the dark between the bells and clappers, and if the electrification be strong, the discharge will be made without actual contact, and the ringing will cease.

### MUSICAL BELLS.

Music bells are still in use in some parts of Europe, and to some extent in this country, and are looked upon as a rare novelty. They are played in Europe by means of keys, not unlike those of a piano forte. An old painting of King David represents him as playing, with a hammer in each hand, upon five bells, which were hung up before him. The music of the THIRTY-THREE bells which were suspended in the tower of the Cathedral at Antwerp is highly celebrated. One of these bells was seven feet wide, and eight feet high. The Swiss bell-ringers, famous for their performances, produce the most exquisite melody from hand bells. The Peak family, and others, in this country, have also become famous in this connection. So skillful are they in the use of them, that they will change from one to another with very great rapidity. The bells vary in size from a large cow-bell to the smallest dinner bell, all with a different key; and as many as FORTY-TWO are used by a company of seven persons.

Bells were early introduced into almost all the countries of Europe. We find three golden bells, in an azure field, making the coat of arms of the imperial house of the Comneni, one of the most illustrious families that have occupied the Byzantine throne.

### LARGE BELLS.

We have stated that bells were first introduced into use in churches about the year 395 of the Christian Era. Since then many very large, and on this account, prominent, bells have been made. As early as the sixth century churches were furnished with their campanile, or bell-tower, which still continues to be one of their distinguishing features. Several were used in a single church, as is still the custom, when arranged in chimes, or, as is sometimes the case, without regard to harmony of tones. This practice of ringing bells in change, or regular peals, is said to be peculiar to England, and the custom seems

to have been introduced in the time of the Saxons, and to have been quite common before the Conquest. The *tolling* of a bell is nothing more than the production of sound by a stroke of the clapper against the side of the bell, the bell itself being in a pendant position and at rest. But in *ringing*, the bell is elevated to a horizontal position, so that, by means of a wheel and a rope, the clapper strikes forcibly on one side as it ascends, and on the other side in its return downwards, producing at each stroke a sound. In England and the United States the ringing of bells is reduced to a system, and peals have been composed which bear the names of the inventor.

There are many very large bells in use. The church of the Abbey of Croyland, in England, had one great bell named *Suthlac*, presented by the Abbot Turketulus, who died about the year 870, and subsequently six others, presented by his successor, Egelric, and named Bartholomew and Betelin, Turketel and Tatwin, Bega and Pega. When all these were rung together, Ingulphus says, "*Fiebat mirabilis harmonia, nec erat tunc tanta consonantia campanarum in tota Anglia.*" But Russia exceeds all other countries in its foundries for bells. In Moscow alone, before the revolution, there were no less than 1,766 large bells; in a single tower there were *thirty-seven*. One was so large that it required twenty-four men to ring it, and this was done by simply pulling the clapper. Its weight is estimated at 288,000 pounds. The great bell cast by order of the Empress Anne, in 1653, and now lying broken upon the ground, is estimated to weigh 443,772 pounds; it is 19 feet high, and measures around its margin 63 feet 11 inches. The value of the metal alone in this bell is estimated to amount to over \$300,000. Whether this bell was ever hung or not authorities seem to differ. We take from Clarke's Travels the following extract concerning the bells of Moscow, and of the great bell in particular: "The numberless bells of Moscow continue to ring during the whole of Easter week, tinkling and tolling without harmony or order. The large bell near the cathedral, is only used upon important occasions, and yields the finest and most solemn tone I ever heard. When it sounds, a deep hollow murmur vibrates all over Moscow, like the fullest

tones of a vast organ, or the rolling of distant thunder. This bell is suspended in a tower called the belfry of St. Ivan, beneath others which, though of less size, are enormous. It is 40 feet 9 inches in circumference,  $16\frac{1}{2}$  inches thick, and weighs more than FIFTY-SEVEN tons." The great bell of Moscow, known to be the largest ever founded, is in a deep pit in the midst of Kremlin. The history of its fall is a fable, and as writers continue to copy each other, the story continues to be propagated; the fact is, the bell remains where it was originally cast; it was never suspended. The Russians might as well, says this same writer, attempt to suspend a first-rate line of battle ship with all its guns and stores. A fire took place in the Kremlin, the flames of which caught the building erected over the pit in which the bell yet remained; in consequence of this the metal became hot, and water thrown to extinguish the fire fell upon the bell, causing the fracture which has taken place. This bell is truly a mountain of metal. It has been said to contain a large proportion of gold and silver, for while it was in fusion the nobles and the people cast in as votive offerings their plate and money. But this story is probably a fiction. The natives of Russia regard it with superstitious veneration, and they will not allow even a grain to be filed off that it may be tested; at the same time, we are informed that the compound has a white, shining appearance, unlike bell metal in general, and perhaps its silvery appearance has strengthened, if not given rise to a conjecture respecting the richness of its materials. On festival days the peasants visit the bell as they would a church, considering it an act of devotion, and they cross themselves as they descend and ascend the steps leading to the bell. In 1837 the Czar Nicholas caused this great bell to be elevated from the deep pit in which it lay, and to be placed upon a granite pedestal. Upon its side is seen, over a border of flowers, the figure of the Empress Anne in flowing robes. The bell has been consecrated a chapel; the door is in the aperture made by the piece which fell out. The size of the room is 22 feet diameter and 21 feet 3 inches in height. The bells of China rank next in size to those of Russia. In Pekin, it is stated by Father Le Compte, there are SEVEN bells,

each weighing 120,000 pounds. Excepting the bells recently cast for the new Houses of Parliament, the largest of which weighs *fourteen tons*, there is only one bell in England larger than that upon the City Hall in New York city, it was cast in 1845, for York Minster, and weighs 27,000 pounds, and is only *seven feet seven inches* in diameter. The great Tom of Oxford weighs 17,000 pounds; and the great Tom of Lincoln 12,000 pounds. The bell of St. Paul's, in London, is nine feet in diameter, and weighs 11,500 pounds. One placed in the Cathedral of Paris, in 1680, weighs 38,000 pounds. Another in Vienna, cast in 1711, weighs 40,000 pounds; and in Olmutz is another weighing about the same. The famous bell called Iusanne of Erfurt, is considered to be of the finest bell metal, containing the largest proportion of silver; its weight is about 30,000 pounds. It was cast in 1497. Luther, when a school boy, must have heard its earliest peals, and in later years have welcomed its sound at each return to Erfurt. At Montreal, Canada, is a larger bell than any in England. It was imported in 1843 for the Notre Dame Cathedral. Its weight is 29,458 pounds. In the opposite tower of the Cathedral is a chime of ten bells, the heaviest of which weighs 6,043 pounds, and their aggregate weight is 21,800 pounds.

Chimes are a collection of bells struck with hammers; or a set of music bells struck by hammers acted on by a pinned cylinder, or barrel, which is made to revolve by clock-work. These are frequently attached to time pieces, and so arranged as to produce chimes, or tunes, at stated intervals; also in church towers to be rung in unison.

There are but few bells of a very large size in the United States. The heaviest is the alarm bell on the City Hall in New York. It was cast in Boston, and weighs about 23,000 pounds. Its diameter at mouth is about eight feet; its height about six feet, and thickness at the point where the clapper strikes six and a half or seven inches. The bell now in the Hall of Independence, in Philadelphia, is celebrated as being connected with the ever memorable 4th of July, 1776, when it first announced by its peal the declaration then made, the most important event in the history of our country. It was imported

from England in 1752, and owing to its being cracked on trial by a stroke of the clapper, was re-cast in Philadelphia, under the direction of Mr. Isaac Norris, to whom we are probably indebted for the following inscription, which surrounds the bell near the top, from Leviticus xxv., 10: "Proclaim liberty throughout all the land, unto all the inhabitants thereof." Immediately beneath this is added: "By order of the Assembly of the Province of Penn. for the State House in Phil." Under this again, "Pass & Stow, Phil., MDCCLIII." In 1777, during the occupation of Philadelphia by the British, the bell was removed to Lancaster. After its return it was used as State House bell until the erection of the present steeple with its bell in 1828. Then it ceased to be used, excepting on extraordinary occasions. Finally it was removed to its present appropriate resting place in the Hall of Independence. Its last ringing, when it was unfortunately cracked, was in honor of the visit of Henry Clay to Philadelphia. There are no other bells of special interest in this country, though many of superior make, and of comparatively large size, in all the larger cities of the States. Those used upon the fire alarm towers are from 9,000 to 12,000 pounds weight. They are hung in a fixed position, and struck by a hammer, instead of being turned over.

### METALS USED.

Bells have been made of various metals. In France formerly iron was used, and in other parts of Europe brass was a common material. In Sheffield, England, the manufacture of cast-steel bells has been recently introduced; this material is said to have an advantage over others in being of greater strength and less weight. Steel bells are cast by pouring the contents of the steel pots into the bell mould instead of into the ordinary ingot moulds. But their tone is said to be harsh and very disagreeable, hence the bell will probably never come into use to any extent. Cast-steel drills, bent into the form of a triangle, and suspended to a building, or post, are much used in place of



bells about mining establishment. But the bell metal, that which is in most extensive use and most generally approved, is an alloy of copper and tin, in no fixed proportion, but varying from 65 to 80 per cent. of copper and the remainder tin. But other metals are often introduced, as zinc, with the object of adding to the shrillness of the sound, silver to its softness, and also lead. The metal of a bell in England was analyzed, and found to consist of copper 800 parts, tin 101, zinc 56, and lead 43. Cymbals and gongs contain 81 copper and 13 tin. Mr. Denison, who had charge of the founding of the new bells for the British Houses of Parliament, thinks the use of silver is entirely imaginary; and that there is no reason for believing it could be of any service. He condemns the use of all other materials but copper and tin, and advised that contracts for bells stipulate that the alloy shall consist of at least 20 per cent. of tin, and remainder copper. Three and a half to one is perhaps the best proportion. These views are generally conceded by manufacturers in this country to be correct, and they are generally governed by them. The bell founders have a diapason, or scale, wherewith they measure the size, thickness, weight, and tone of their bells, and have carried the art of making them to a high degree of perfection.

The sound of a bell is produced by the vibratory motion of its parts, somewhat like that of a musical chord. The stroke of the clapper must necessarily change the figure of the bell, and from a circle convert it into an oval or ellipse; but the metal having a great degree of elasticity, that part impinged on by the clapper, and driven farthest from the center, will return, and even incline nearer the center than before; so that the two parts which were extremes of the longest diameter become in turn those of the shortest; and thus the external surface of the bell undergoes alternate changes of figure, and by this means gives that tremulous motion to the air, in which the sound consists. The proportion of metals, shape and proportion of bells, all affect the sound, hence the adjusting of a bell to produce a smooth, uniform, even sound, requires skill and experience, and thorough testing. There are different theories as to the philosophy of sound produced by the bell. One eminent

writer maintains that a bell is a compound of an infinite number of rings, which, according to their dimensions, have different tones, as chords of different lengths have; and when struck, the vibrations of the parts immediately impinged determine the tone, being supported by a sufficient number of consonant tones in the other parts.

Bells are heard to a greater distance when placed on plains than on hills, and still further in valleys than on plains; the reason of which seems to be, that the higher the sonorous body the rarer is the medium, and, consequently, the less impulse it receives, and the less proper medium it is to convey sound to a distance.

### SHAPE OF BELLS.

As pots and other vessels more immediately necessary in the service of life were made before bells, it probably happened that the observing of these vessels to have a sound when struck gave rise to the making of larger bells of that form; but that hemispherical form proved not to be the best and is now only used in small bells, such as door-bells, clocks, &c., but entirely unfitted for the heavy, far-reaching, and pleasing tones required in large bells. The conical form in general use is most approved.

### MANUFACTURE OF BELLS.

The European process of casting bells is to make the mould in a depression in the sand floor of the foundry, piling up a hollow case of brickwork upon a solid foundation, in which a fire is kept burning to preserve the liquid metal, when poured around it, from too rapid cooling. The outer surface of the case is the shape of the inner surface of the bell. To give the outer surface, a cover of earthenware is "fashioned to fit over the case, leaving between these a vacant space to be filled with

the metal. This arrangement is deficient in not providing proper escape for the gases, which are engendered in heavy castings in the earth, and which are liable to cause the metal to be porous, or, being highly inflammable, to explode with great damage. An improved process has been introduced at the Troy Bell Foundry, consisting in the use of perforated iron cases, the outer one in the shape of the bell, and the inner one the case, which sets in the center of its saucer-shaped foundation. Each of these receives a coating of loam, the outer one within, and the case around its outside; but over the latter is first wrapped a straw rope, which, taking fire and burning slowly as the metal is poured between the two cases, leaves a free space for the bell to contract in cooling without straining. The perforations through the cases let out the vapors, and also serve to keep the coating of loam in its place. As the gas escapes through these holes, it burns with a pale blue flame without risk, the whole apparatus being placed above the level of the ground.

The best proportion of the height of a bell to its greatest diameter is said, by foreign authorities, to be as 12 to 15. In conformity to the laws of accoustics, the number of vibrations of a bell varies in inverse ratio with its diameter, or the cube root of its weight.

### INSCRIPTIONS.

Many of the inscriptions found on old bells are quaint and interesting as indicating the superstitions and fancies of the ancients in connection with bells, as well as their great reverence for them and fear of their power. They also indicate, in many cases, the customs of the people. These inscriptions were often in honor of some saint, or to commemorate some act of special mercy or charity, or deliverance. A peel of eight bells in the tower of St. Helen's Church, Worcester, England, cast in the year 1706, bear inscriptions in couplets commemorative of Blenheim, Barcelona, Ramilies, Menia, Turin, Egen, Marlborough and Queen Anne.

The following old Latin inscription—or fragments of it—has been rung upon European bells for centuries :

\* “Laudo Deum verum, plebem voco, conjugo clerum,  
Defunctus ploro, pestem fugo, festa decoro.  
Funera plango, fulgura frango, Sabbata pango,  
Excito lentos, dissipo ventos, paco érucentos.”

The following one has been common in England for 300 years, and also much used in this country :

“I to the church the living call,  
And to the grave do summon all.”

*The following are selections of some old inscriptions :*

One upon a bell in Wiltshire, England, cast 1619 :

“Be strong in faythe, prayes God well  
Francis Countess Hertford's bell.”

Upon one in Oxfordshire, cast 1667 :

“I ring to sermon with a lusty boome,  
That all may come, and none stay at home.”

Upon one in Nottinghamshire, cast 1603 :

“Jesus be our spede.”

Upon one in Wiltshire, cast 1585 :

“O man be meeke and live in rest.”

Upon one (a fire bell) in Dorsetshire, cast 1652 :

“Lord quench this furious flame,  
Arise, run, help, put out the same.”

Upon one in Somersetshire, cast 1700 :

“All you of Bath that hear me sound,  
Thank Lady Hopton's hundred pound.”

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\* I praise the true God ; I call the people ; I assemble the clergy ;  
I lament the dead : I drive away infections ; I grace the festival.  
I mourn at the burial ; I abate the lightnings ; I announce the Sabbath ;  
I arouse the indolent ; I dissipate the winds ; I appease the revengeful.

Upon one in Hampshire, cast 1600 :

" God be our guyd."

Upon one in Cambridgeshire (St. Benet's Cambridge), one of a peal of six, cast 1607 :

" Of. al. the. bells. in. Benet. I. am. the. best.  
And. yet. for. my. casting. the. parish. paide. lest."

Upon one in Warwickshire, cast 1675 :

" I ring at six to let men know  
When too and from thair worke to go."

Upon one in Staffordshire, cast 1604 :

" Bee it known to all that doth me see  
That Newcombe of Leicester made me."

John Martin also makes himself known upon one (of a peal of three) in Worcestershire, cast 1675 :

" John Martin of Worcester he made wee  
Be it known to all that do we see."

The great bell of Rouen, in France, presented to St. Mary's church by George, Archbishop of Rouen, bore this inscription :

\* " Je suis nommée George d'Ambois,  
Que plus que trente six mil pois ;  
Et si qui bien me poysera,  
Quarante mil y trouvera "

One of three in Orkney, Scotland, cast in 1528, bears the following :

" Maid be master robert maxvel, bishop of Orkney, y<sup>e</sup> second zier of his consecration y<sup>e</sup> zier of Godc I<sup>m</sup>V<sup>c</sup> XXVIII, y<sup>e</sup> XV. zier of kyng James y<sup>e</sup> V. be robert borthvyk ; maid al thre in y<sup>e</sup> castel of Edynburgh."

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\* I am named George of Amboise, and weigh more than thirty-six thousand pounds ; my true weight would be nearer forty thousand.

Upon the great bell in Glasgow Cathedral, is this :

"In the year of grace 1583, Marcus Knox, a merchant in Glasgow, zealous for the interest of the Reformed Religion, caused me to be fabricated in Holland for the use of his fellow-citizens of Glasgow, and placed me with solemnity in the Tower of their Cathedral. My function was announced by the impress on my bosom: '*Me audito venias doctrinam sanctam ut discas,*' and I was taught to proclaim the hours of unheeded time. 195 years had sounded these awful warnings when I was broken by the hands of inconsiderate and unskillful men. In the year 1790, I was cast into the furnace, refounded at London, and returned to my sacred vocation. Reader! thou also shalt know a resurrection; may it be to eternal life. Thomas Mears fecit, London, 1790."

Most intimately is the voice of the bell associated with the religious and imaginative, as also with the most joyous and saddest feelings of mankind.

















